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FACULTY OF EDUCATION
The University of Alberta

Editor's Message

Readers will note that there are some changes in the list of consulting editors with this issue.

After serving for a period of three years, the following scholars have retired from their duties as consulting editors of AJER:

Michael Connelly
Robin H. Farquhar
Evelyn Gagné
J. W. G. Ivany
Wayne C. Nesbit
Eigil Pedersen.

They have been replaced by the following, whose institutional affiliation and research interests are included:

W. R. Andrews, Professor, Faculty of Education, *Queen's University*; special education, outpatient psychological counselling, applications from neuropsychology.

Bom Mo Chung, President, *Chungbuk National University*, Republic of Korea; general education in a changing society, early childhood education, school instruction.

Bruce Harrison, Professor of Curriculum and Instruction, *The University of Calgary*; cognitive learning theory and mathematics instruction, role of microcomputers in schools, the clinical interview in research.

Naomi L. Hersom, Dean of Education, *University of Saskatchewan*; curriculum theory, research and evaluation; teacher education, women in education.

Erwin Miklos, Professor of Educational Administration, *The University of Alberta*; administrative structures and processes in education.

Paul Robinson, Senior Research Associate, *Atlantic Institute of Education*; environmental education, development of curricula for native people, Canadian studies and Canadian literature.

Ross E. Traub, Chairman, Department of Measurement, Evaluation and Computer Applications, *Ontario Institute for Studies in Education*; psychometrics, educational evaluation, and principles of test construction.

The wide ranging research interests of these new members make it possible for them to provide essential advice in the process of manuscript assessment. At the same time they serve as a panel to consider general matters which relate to the production of the journal.

To those who are retiring, I wish to express my sincere appreciation for the time and energy they have given to A.J.E.R. over the past three years. The former editor, Dr. Henry W. Hodysh, and I are indeed indebted to them.

I wish to welcome the new group of Consulting Editors and extend the wish that their term of appointment will be challenging and satisfying.

Doyal Nelson

The Alberta Journal of Educational Research *Vol. XXVIII, No. 1, March, 1982, 1-8*

VIRGINIA REYES KRAMER
and
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English Auditory Discrimination Skills of Spanish-Speaking Children

Spanish-speaking children can be expected to experience auditory discrimination problems because of their language-different background. Although there are similarities in the sound systems of Spanish and English, the phonological differences between the two may lead the Spanish speaker to misinterpret unfamiliar English sounds. Some of those potentially confusing sounds were identified in this study. The results, which ranked eighteen pairs of sound contrasts (e.g., n-ng) in order of difficulty, showed that the contrasts v-b, ch-sh, and s-sp were the most difficult for the subjects to discriminate. These findings are of potential use for educators planning instructional programs in beginning reading for Spanish-speaking children as well as for teachers planning lessons in English as a Second Language class.

Studies with monolingual, English-speaking subjects have shown that beginning reading achievement is related in part to the reader's skill in auditory discrimination, i.e., the ability to distinguish between similar sounding words such as pen-pin and sun-sum (Wepman, 1960; Thompson, 1963; Flynn & Byrne, 1970; Marzano, 1976). However, the auditory discrimination problems of Spanish-speaking children who speak English minimally or as a second language are less well understood. Although the phonological systems of English and Spanish differ, few research studies have been done to investigate how these differences might be related to auditory discrimination and beginning reading problems. Studies have documented that Spanish-speaking children experience

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reading problems in an English-based curriculum and that they frequently score low on standard reading tests (U.S. Commission on Civil Rights, 1971; Chorvinsky, 1977). One contributing factor to low reading achievement, particularly in beginning reading programs incorporating a significant decoding component (which nearly all basal reader series do), could be the inability to hear correctly certain English sounds, sound sequences (consonant clusters), or phonic variants of consonants (Saville, 1970; Modiano, 1973; Matluck & Mace, 1973). For example, Spanish lacks equivalent English sounds for the sounds represented by *v* and *sh*. Spanish has twelve consonant clusters whereas English has more than three times that many, and in Spanish there are no consonant combinations, such as *ld* and *nd*, which can appear in final position (Cárdenas, 1960). Certain English phonemes, such as /n/ – /ŋ/ in si*n*-si*ng*, can be contrasted in minimal pairs to signal a difference in meaning, whereas in Spanish n-ng are never contrasted and occur as sound variants of the same phoneme /n/ (Stockwell & Bowen, 1973). In the latter, the sound variant one uses within a Spanish word is obligatory by position, for example, the sound represented by *ng* occurs only before velar consonants as in the word *cinco*. Therefore a Spanish-speaking person could have difficulty discriminating auditorily between vote-boat, shoe-chew, cold-coal, and sun-sung. Being able to distinguish such minimal differences in words would appear to be an important skill in learning to read in programs where the reader must associate a phoneme with a specific letter or cluster of letters. It could be confusing and thus interfere with contextual meaning if the beginning reader reads boat for vote or wash for watch. Menyuk (1976) notes that unsuccessful readers have difficulty in getting past phonic analysis which makes it difficult for them to read with meaning. A Spanish-speaker who has not learned to discriminate those English sounds uncommon to his/her own language may find it difficult to move beyond phonic analysis as he/she begins to read. Therefore, in order to provide Spanish-speaking children with all the skills necessary to participate successfully in phonic instruction, an auditory discrimination training program of difficult English sounds may serve as an essential first step.

The purpose of this study was to determine the degree of difficulty, based on percentage correct responses, of eighteen contrasting English sound pairs (e.g., b-v) for Spanish-speaking, Mexican American subjects in Kansas. Although two other studies (Sardy, 1969; Springer, 1975) were found which discussed English sound contrasts difficult for Spanish-speaking children to discriminate, it was felt that this study differed from them in that:

1. neither study reported the degree of difficulty for individual pairs of contrasted sounds;
2. the general focus of the two studies was to compare auditory discrimination skills of Spanish-speakers with one or two other ethnic groups whereas this study limited itself to Mexican American subjects. Sardy (1969) and Springer (1975) also compared the auditory discrimination skills of the ethnic groups with a reading skill;
3. the two studies (Sardy, 1969; Springer, 1975) used Puerto Rican subjects from the East coast. Differences in English sound discrimination abilities can be expected between Puerto Rican and Mexican American children since Spanish speakers from different Latin American backgrounds will not always experience the same auditory discrimination problems.

Although the study was limited to Spanish-speaking Mexican American children in Kansas, the results are global in nature. In any situation where the

country's mother tongue is English, phonological differences between Spanish and English will require the Spanish speaker to make new auditory discriminations. The study reports by rank order some of the difficult discriminations that can be anticipated.

Method

Subjects

The subjects for this study were eighteen Mexican American pupils in the first, second, and third grades from two urban schools in Kansas. The subjects were selected on the basis of three criteria. One, they had to be able to respond to a series of questions in Spanish in order to show that they were really Spanish-speaking; two, they had to be able to respond to a series of questions in English since the test used only English words and it was felt some knowledge of the language was required; and three, their reading achievement had to be at least at the preprimer level but not above the first grade level as determined by their teachers. None of the subjects was reading at grade level.

Auditory Discrimination Test

The auditory discrimination test consisted of eighteen pairs of words selected because they contrasted sounds potentially difficult for Spanish-speaking children to distinguish. The pairs were selected on the basis of (1) a contrastive analysis between Spanish and English, (2) the results in two previous studies (Sardy, 1969; Springer, 1975), and (3) a pilot study conducted in a separate Kansas community. During testing, the subjects were asked to identify whether minimally contrasting word pairs sounded the same or different, e.g., sheet-cheat. Each of the eighteen sound pairs was tested twice, using different words each time, for a total of 36 items. In addition, the test included 16 control (same) items and 8 word pairs thought to be easy to discriminate as different (e.g., train-tree). The easy word pairs also served as controls. The test of 60 word pairs was divided into two parts, each part containing 18 minimally different word pairs, 8 same items, and 4 easy word pairs.

Of the sound pairs tested, 11 were contrasted in the final position of the word and the remaining 7 were contrasted in the initial position. These 18 sounds and their word pairs are shown in Table 1. Using a table of random numbers, the 18 minimal word pairs were distributed within both parts of the test whereas the control items were assigned arbitrarily among the test items. The reliability of the test was 0.91 as determined by a Kuder-Richardson 20 formula. The test was recorded on cassette tape with the word pairs being repeated only once at ten-second intervals.

Procedure

The eighteen subjects took both parts of the test in groups of two in a small room free from distractions and extraneous noises. Each part was administered by the researcher on consecutive days. The children were guided through a short pretraining program which had two purposes: one, to make sure the subjects understood the meanings for the words, "same" and "different", since after listening to the word pairs, they would circle on their answer sheets "S" for same and "D " for different; and two, to practise listening to items somewhat similar to

those that would be encountered on the test and to practise circling their responses on answer sheets.

TABLE 1

RANK ORDER BY PERCENTAGE OF ITEMS IN AUDITORY DISCRIMINATION TEST

Order of Difficulty	Contrast	Word Pair	Correct Response (%)	Average % of Correct Response
1	v-b (f)[a]	rove-robe[b]	17.6	14.7
		curb-curve	11.8	
2	sp-s (f)	clasp-class	35.3	17.6
		grass-grasp	0	
3	ch-sh (i)	chair-share	17.6	20.5
		sheet-cheat	23.5	
4	v-b (i)	vest-best	35.3	26.4
		boat-vote	17.6	
5	s-st (f)	pass-past	23.5	41.4
		lost-loss	58.8	
6	ld-l (f)	cold-coal	41.2	41.2
		bowl-bold	41.2	
7	n-nd (f)	win-wind	35.3	44.1
		find-fine	52.9	
8	v-vd (f)	save-saved	47.1	47.1
		lived-live	47.1	
9, 10[a]	m-n (i)	me-knee	17.6	52.9
		nice-mice	88.2	
9, 10[b]	ch-sh (f)	wash-watch	70.6	52.9
		ditch-dish	35.3	
11	z-s (i)	zoo-sue	47.1	61.8
		sip-zip	76.5	
12	p-b (f)	cup-cub	52.9	64.7
		rub-rip	76.5	
13	n-m (f)	cane-came	17.6	58.8
		them-then	100.0	
14, 15[a]	sm-m (i)	smile-mile	64.7	73.5
		mash-smash	82.4	
14, 15[b]	v-f (f)	leave-leaf	70.6	73.5
		have-half	76.5	
16, 17[a]	n-ng (f)	sun-sung	52.9	67.6
		tongue-ton	82.4	
16, 17[b]	j-ch (i)	jeep-cheap	47.1	67.6
		chug-jug	88.2	
18	s-θ[c]	sink-think	94.1	94.1
		thaw-saw	94.1	

[a]Final word position is indicated by the letter f and initial word position by the letter i.

[b]The first word pair in each of the items was tested in part one and the second word pair in part two.

[c]Represents the sound heard at the beginning of think and thaw.

Results and Discussion

The 36 items of the auditory discrimination test were analyzed individually as to the proportion of right answers.The results in order of difficulty are shown in Table 1.

Four pairs had 26% or fewer correct responses and were arbitrarily judged to be the most difficult sound pairs for the subjects to discriminate. These were: b-v (initial position), b-v (final position), ch-sh (initial position), and sp-s (final position). Four other pairs were between 40% and 50% correct: s-st (final position), l-ld (final position), n-nd (final position), v-vd (final position). Seven sound pairs were between 50% and 70% correct, z-s (initial position), m-n (initial position), ch-sh (final position), p-b (final position), m-n (final position), n-ng (final position), j-ch (initial position).

It was not unexpected that the b-v and ch-sh contrasts were particularly difficult to discriminate. As noted earlier, the Spanish sound system does not include the English sounds for *v* and *sh*. In English, these sounds are commonly contrasted with *b* and *ch*, respectively, to signal a difference in meaning. However, similar-type contrasts do not occur in Spanish, which explains the discrimination confusions demonstrated by the subjects.

The results of the study generally verified, as noted earlier, that final consonant clusters can be a particular source of difficulty for Spanish speakers. Consonant clusters which were tested in the initial position, items 14-15*a* and 18, did not present auditory discrimination problems. However, this was not the case for six consonant clusters in the final position (items 2, 5, 6, 7, 8 and 16-17*a*). The 12 responses for these clusters showed that in 8 of the item responses, fewer than half of the subjects made the correct discrimination. Of particular difficulty were the sound pairs s-sp, l-ld, and v-vd. This finding is in agreement with the Springer (1975) study which concluded that the greatest number of discrimination errors made by Puerto Rican subjects were final consonant clusters.

Three test items had low percentages of correct responses in part one while the corresponding pair in part two was answered correctly by more than half of the subjects. These items were m-n in the initial and final position (9-10*a* and 13, respectively) and j-ch in the initial position. The discrepancy in responses between the two tests may possibly be explained by a vowel influence. Whether or not the subjects were able to discriminate the word pairs as different could be due to whether a tense or lax vowel[1] followed or preceded the phoneme. Each sound contrast in the word pairs on part one (me-knee, 17%; cane-came, 17%; jeep-cheap, 47%) was followed or preceded by a tense vowel, whereas in part two the sounds were followed or preceded by a lax vowel (nice-mice, 88%; them-then, 100%; chug-jug, 88%). It may be that the tenseness or laxness of the vowel affected how clearly the contrasting sound pair was heard by the participants. The sounds that were followed or preceded by a lax vowel were easy to discriminate whereas the reverse was true when a tense vowel was adjacent to the sound being tested.

Five items were answered correctly by at least 50% of the subjects on both parts of the test which indicated that the contrasts were not particularly difficult to discriminate. These were p-b, v-f, n-ng in the final position (items 12, 14-15*b*, and 16-17*a*, respectively) and sm-m, s-θ in the initial position (items 14-15*a* and 18). However, Puerto Rican subjects in either the Sardy (1969) or Springer (1975) studies had above average number of error responses for v-f and s-θ. The sound

contrast, n-ng, was difficult for subjects in both of these studies to discriminate and their results confirm Wolff's (1950) statement "Speakers of Puerto Rican Spanish are often aware of an /n/ but are usually unable to distinguish it from /ŋ/ in final position" (p. 40).

Although Mexican American subjects in the present study and Puerto Rican subjects in the Sardy (1969) and Springer (1975) studies made similar auditory discrimination errors, there were also differences. Similar sound discrimination errors included the contrasts for b-v, s-st, l-ld, n-nd, v-vd, s-sp in the final position and b-v, ch-sh in the initial position. On the other hand, Puerto Rican subjects did not discriminate well the sound contrasts for j-ch, z-s, s-θ, m-n in the initial position or n-ng, ch-sh, n-m, v-f in the final position. Allowing for the discrepancy noted above that m-n and j-ch actually reflected a problem between tense and lax vowels, these contrasts were not a problem for Mexican American subjects in this study. Therefore, some similarities in auditory discrimination problems can be anticipated between Mexican American and Puerto Rican individuals learning English. Nevertheless, small but distinct differences between the two Hispanic groups should be expected.

Conclusions

This study, along with others, shows conclusively that Spanish-speaking children have some auditory discrimination problems. Many of these appear to be serious enough to warrant specific attention either before or as a part of phonics instruction. For example, the English allophones for *v* and *sh* are very likely to cause sound confusions. Also, the consonant clusters, sp, st, ld, and nd in final position, are particularly difficult for Spanish-speaking (Mexican American) subjects to discriminate since their listening skills based on the native language apparently have not been developed to listen to clusters at the end of words. The rank order of sound contrasts specifies which of these discriminations should receive the most attention in an instructional program for Mexican American children still developing English-language skills. The rank order alerts educators as to whether to expect auditory discrimination errors in the initial word or final word position.

When giving phonics instruction in English to Spanish-speaking children, teachers should be aware of the sounds identified as difficult in this and similar studies. These children should probably be given special auditory discrimination training that stresses difficult-to-hear sounds prior to phonics instruction in order for them to learn the sound-letter associations better. This study does not necessarily recommend phonic analysis as the way to teach beginning reading to Spanish-speaking children; some authorities recommend using the language-experience approach with these children (Ching, 1976; O'Connell & Dew, 1973; O'Brien, 1973). But where phonic analysis is a significant component, these results seem noteworthy.

The variation in auditory discrimination ability among subjects in the studies by Sardy (1969) and Springer (1975) as well as in the present study points to the fact that although such studies along with a contrastive analysis of Spanish and English can help to predict difficult English sounds for Spanish speakers, other factors such as dialectical differences from one Spanish-speaking country to another may affect a subject's ability to discriminate English allophones or sound sequences. For example, speakers of Puerto Rican Spanish suppress final *s* in

Spanish words (Navarro, 1974), which may influence final *s* discrimination in English words. On the other hand similar assimilation of *s* rarely occurs in Cuban Spanish (López Morales, 1971). Only individual testing similar to that described in this study will determine those sounds that are difficult to discriminate or that are potentially confusing, according to the subject's particular environmental and dialectical influences.

Notes

1. In a tense vowel, the front part of the tongue is held high and in close position to the upper jaw which causes a bunching of the muscles. In a lax vowel the tongue is held in a lower position and away from the alveolar ridge. One can feel the tenseness and bunching of the muscles by articulating "beat" whereas the lack of bunching common to lax vowels can be felt in "bit" (Hockett, 1958).

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Teaching Style and Sociopsychological Climates

Based on hypotheses in research on teacher expectancy, teacher effectiveness, sociospychological climates, teacher personality, and aptitude by treatment interaction, the relationships between teaching style and classroom learning atmospheres were investigated. Sixty-four teachers and student teachers in rural and urban high schools served as subjects. Results indicated that teachers exhibiting different teaching styles attempt to create classroom sociopsychological climates consonant with their teaching style. Open, nondirective teachers emphasize teacher support, innovative instructional procedures, and flexible rules. Directive teachers emphasize classroom control and competitive, task oriented classes. All types of teachers emphasize relationship patterns focusing on involvement and on developing friendships.

The usefulness of the construct of teaching style has received a great deal of attention in recent years (Cronbach & Snow, 1977; Doyle, 1978; Good, 1979; Flanders, 1969, 1970; McNeil & Popham 1973; Peterson 1979a, 1979b; Snow, 1977b) and is particularly important for aptitude by treatment interaction (ATI) (Cronbach & Snow, 1977; McCann, 1980; Snow 1977a, 1977b; Tobias, 1976) and teacher effectiveness studies (Doyle, 1978; Flanders, 1969, 1970; Good, 1979). These studies have frequently found that teaching style affects student performance. The question of why and how teaching style affects students, however, has not been directly investigated. One hypothesis often cited for why teaching style differentially affects students is that when teachers teach differently, they create different learning environments. These different environments, termed here sociopsychological climates, then elicit different student behavior patterns. This supposition has been indirectly supported by research in the areas of matching models in education, sociopsychological climates, aptitude by treatment interaction, teacher personality, and teacher expectancy.

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Coop and Sigel (1971), Hunt (1971, 1975), Lessor (1971), and Witkin, Moore, Goodenough and Cox (1977) all support the idea that if one appropriately matches sociopsychological climate to student characteristics, positive consequences result.

Hunt (1975) reviewed a number of studies focusing on differences in the amount of instructional structure and concluded that differences in structure resulted in both different sociopsychological climates and different student behaviors. Hunt further posited that when sociopsychological climate structure is appropriately matched to the students' need for structure, positive behavioral and attitudinal changes are exhibited. Witkin and associates (1977) reported similar findings utilizing the construct of field articulation. Considering differences in field independence/dependence as indicators of teaching style and learning style, they found that when teachers and students exhibiting similar styles were placed in appropriately matched sociopsychological climates, positive behavioral and attitudinal gains were exhibited. However, they suggested that mismatches between teaching style, learning style, and sociopsychological climate may at times be desirable and may also result in positive gains if the mismatch is systematically constructed to further learning along specific lines.

In sociopsychological climate literature, using regular junior and senior high school classes in a variety of schools and subject areas, the existence of a number of different types of sociopsychological climates has been documented (Hearn & Moos, 1978; Moos, 1978), and sociopsychological climates have been found to be good predictors of a variety of cognitive and affective behaviors (Anderson, 1970, 1971; Walberg, 1968, 1969a, 1969b; Walberg & Anderson, 1968a, 1969b, 1972). Combining the results of these two areas allows one to link together teaching styles, sociopsychological climates, and student behavior differences. Moos (1979) and Walberg (1977) cite numerous examples of teacher style differences (junior high, senior high, math, language, social science teachers) resulting in both different sociopsychological climates (directed, open, competitive, structured) and in different student behavior patterns (interest in course, amount of extra course reading, attitude toward field of study, satisfaction with course, achievement)(see also Moos, 1978; Walberg, 1968; Walberg & Anderson, 1968b, 1972).

Aptitude by treatment interaction (ATI) research comes closest to investigating interactions between teaching style and sociopsychological climate. Early ATI research comparing authoritarian and democratic teaching styles (Anderson, 1959) and teacher-centered versus student-centered teaching styles (Flanders, 1969, 1970) generally found equivalent levels of student success with all four types of teaching styles. Subsequent examination of the results, however, frequently revealed evidence indicating that not only were different sociopsychological climates established by the different types of teachers but these different teaching style sociopsychological climate matches were effective for different combinations of students (see Lewin, Lippit, & White, 1939; Doyle, 1978; Dunkin & Biddle, 1974; NcNeil & Popham, 1973).

Recent ATI research has been more systematic in creating particular types of treatment effects (conceptualized here as different teaching styles) designed to meet particular ends with a particular types of students (Cronbach & Snow, 1977; McCann, 1980; Peterson, 1979a, 1979b; Snow, 1977a, 1977b) and frequently report gains on the dependent variables of interest (test scores, behavior patterns, student interest), and changes in the sociopsychological climate.

Another area of research supporting the proposed link between teaching styles and sociopsychological climates is research concerned with a teacher's personality, preferences, attitudes, and behavior (as indicators of teaching style) (Allen, Hamelin & Nixon, 1976; Cantrell, Stenner & Katzenmeyer, 1977; Hummel-Rossi & Merrifield, 1977; Jones, Blaney & King, 1974; Schneider & Brookover, 1974; Walberg, 1968). Cantrell and associates (1977), for instance, started with the premise that "a teacher's knowledge, attitudes, or other characteristics are correlated with that teacher's classroom teaching processes, which in turn effect changes in student behavior and/or achievement" (p. 172). Results indicated that three types of teacher profiles (traditional authoritarian, positive contingency manager, and traditional nonauthoritarian) responded differently in classes and were rated differently on both the Minnesota Teacher Attitude Inventory (MTAI) and the Alternative Classroom Strategies Inventory (ACSI). Hummel-Rossi and Merrifield (1977) reported that teachers self-reported different reactions (eliciting, permissive, directive, encouraging, challenging) to different student personality types (anxious, insecure, conforming, tough or tender minded) indicating a connection between the teacher's teaching style and the student's personality. Schneider and Brookover (1974) found correspondences between different types of teacher orientations, school achievement, and sociopsychological climates.

A final area of research, support for hypothesized link between sociopsychological climate and teaching style is found in the teacher expectancy literature. Recent expectancy research has focused on questions such as "how (expectancy effects) operate in school situations" (Baker & Crist, 1971, p. 64) and "(an identification and delineation of the) ways in which the teacher acts on expectancy input" (Braun, 1976, pp. 197-198).

Initial attempts to describe the mechanisms which mediate teacher expectancy and differential student performance differences focused on teacher behavior (Brophy & Good, 1970, 1974). These studies have led to mixed results, sometimes finding behavior differences associated with expectancy differences (Brophy & Good, 1970) and sometimes not finding differences (Brophy & Good, 1974, Chapter 5).

A side effect reported in many of these behavior oriented studies (qualitative differences in teacher warmth, openness, reservedness, friendliness, and aloofness), however, provides an avenue for further research. Whether or not direct behavioral differences exist for different teacher expectancy groups, these reported qualitative differences not accounted for by the behavioral analysis have been hypothesized to be related to differences in student attitude and behavior (Brophy & Good, 1974, Table 5.2; Silberman, 1969; Yarrow, Waxler & Scott, 1971). What appears to be taking place in the different teacher expectancy groups is that, based on their expectancies, teachers react differently (teaching style differences) by differing on dimensions such as warmth, openness, friendliness, etc., and therefore create different learning environments. Thus, the teaching style variables may be the factor creating differences in affiliation, innovation, teacher support, and teacher control, all of which are sociopsychological climate variables. Therefore, these studies provide support for the existence of a teaching style sociopsychological climate interaction. Schultz (in press) supported this contention by finding that teachers expected four different types of student groups (differing in race and ability) to need different types of sociopsychological climates.

Given the above indirect support for a relationship between a teacher's teaching style and the types of sociopsychological climate established by the

teacher, the purpose of the present study was to investigate this relationship directly. The Minnesota Teacher Attitude Inventory (MTAI) (Cook, Leeds & Callis, 1951) was chosen to assess teaching style since a recurring dimension of teaching style has been the authoritarian versus democratic or stuctured/teacher versus unstructured/student centered dimension (Anderson, 1959; Flanders, 1969, 1970; Good, 1979; Peterson, 1979b). The Classroom Environment Scale (CES) (Moos & Trickett, 1974) was chosen to assess sociopsychological climates since it represents both a theoretically (Insel & Moos, 1974) and an empirically (Schultz, 1979) well grounded assessment instrument.

Method

Subjects. Subjects were 64 teachers and student teachers (16 and 48 respectively) attending summer classes in learning and instruction and in individual differences in education at a major university. Teachers were employed in a variety of rural and urban schools and all student teachers had gone through practicums providing them with direct teaching experience and an opportunity to begin the development of their own teaching styles. There were 5 males and 11 females in the teacher group, and 22 males and 26 females in the student teacher group. All subjects were from middle SES backgrounds and taught in middle SES schools.

Procedure. All subjects filled out the Minnesota Teacher Attitude Inventory (MTAI) (Cook, Leeds & Callis, 1951) and the Classroom Environment Scale (CES) (Moos & Trickett, 1974). The MTAI yields a single score between -150 and +150 (converted to 0-300 for this study), which indicates a person's degree of "openness," "indirectness," or "student centeredness" with respect to teaching style. The higher their score the more "open" their teaching style.

The CES assesses the sociopsychological climate of classrooms with respect to nine dimensions arranged in three categories: (1) Relationship Category: dimensions of Involvement, Affiliation, and Teacher Support; (2) Personal Development Category: dimensions of Task Orientation, and Competition; (3) System Maintenance and System Change Category: dimensions of Teacher Control, Rule Clarity, Innovation, and Order and Organization.

The ideal form of the CES was used since it frames its questions with respect to how teachers would set up their ideal classroom's sociopsychological climate. The questions then reflect how one would describe this ideal classroom environment. While such an ideal description will not necessarily reflect the actual sociopsychological climate the teacher will set up, it will give an indication as to the main parameters a teacher would use when setting up an actual climate.

All student teachers were tested in one session during regular classtime. Teachers were mailed questionnaires and responded on their own. Teachers were asked to return the forms within two weeks. Most teachers met this deadline. Response rate for teachers was 80%.

Design. Three teaching style groups were formed on the basis of the MTAI scores. Analyses of variance (ANOVA's) were then used to assess differences on the CES subscale scores for the three teaching style groups.

Results

The means and standard deviations for the MTAI and for each of the nine subscales of the CES are listed in Table 1. The range of scores for the MTAI was 114 to 264 (teachers' scores ranged from 137 to 218 while the more heterogeneous

group of student teachers ranged from 114 to 264). The overall mean for the MTAI is above the mean of the instrument, an indication that the present group of teachers and student teachers exhibits an overall teaching style which is more open and less traditional than the norm group for the MTAI. Given that the MTAI was developed during the 1950's, and given the present *zeitgeist* of teacher training programs, it is not surprising that the present group falls on the more open end of the continuum.

No overall MTAI differences were found between the teacher and student teacher groups. Therefore the three teaching styles groups were formed on the basis of the total subject pool. Group 1 (MTAI 1) had a mean MTAI score of 153.22 with a range of 114-171. Group 2 (MTAI 2) had a mean of 191.13 with a range of 172-203. Group 3 (MTAI 3) had a mean of 223.83 with a range of 204-264. The MTAI scores of these three teaching style groups were significantly different at the .0000 level. Scores on six of the nine CES subscales were significantly different for the MTAI groups (see Table 1). Thus, the main hypothesis of the study, that teaching style would be significantly related to sociopsychological climate, was supported.

Ancillary analysis on possible sources of difference within the subject pool found no major differences between the teacher and student teacher subgroups. Age differences, years of teaching experience differences, and type of degree differences were investigated. While there were occasional significant differences on one or two of the CES subscales, no overall pattern differentiating the student teachers from the teachers emerged.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR MTAI AND EACH CES SUBSCALE FOR EACH MTAI LEVEL

	Whole Group		MTAI 1		MTAI 2		MTAI 3			
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F* (2,61)	*p*<
MTAI	192.58	31.22	153.22	16.22	191.13	10.41	224.83	14.59	136.99	.0000
Involvement	9.67	.78	9.89	.32	9.52	.95	9.65	.88	1.08	.34
Affiliation	8.44	1.38	8.94	1.76	8.61	1.27	9.00	1.17	.51	.59
Teacher Support	9.22	.93	8.56	.92	9.30	1.02	9.65	.49	8.90	.004
Task Orientation	6.00	1.87	7.17	1.85	5.96	1.67	5.13	1.84	7.18	.001
Competition	4.69	2.29	5.72	2.11	5.00	2.28	3.57	2.04	5.47	.006
Teacher Control	3.86	1.86	4.78	1.72	4.13	1.58	2.86	1.79	6.74	.002
Rule Clarity	7.88	1.73	8.56	1.50	8.04	1.43	7.17	1.97	7.67	.03
Innovation	8.72	1.33	8.28	1.60	8.52	1.47	9.26	.62	3.41	.03
Order and Organization	8.33	1.25	8.67	1.08	8.26	1.29	8.13	1.32	.98	.37

Discussion

Past research has shown that representing sociopsychological climates in terms of categories of dimensions such as those presented by Moos (1973) are conceptually sounder and lead to fewer interpretation difficulties than reporting results of each dimension separately (Ellet, Perkins & Payne, 1976; Hoyle, 1976; Schultz, 1975, 1979). Therefore, the results will be discussed with respect to Moos' categories of (1) Relationship dimensions; (2) Personal Development or Orderliness/Achievement Climate dimensions; and (3) System Maintenance and System Change or Control dimensions.

The three teaching style (MTAI) groups exhibited different preferences within the three sociopsychological climate categories, and the two extreme MTAI groups are representative of the structured and unstructured groups reported by Moos (1978, 1979) and the directive and nondirective groups cited by Flanders (1969, 1970) and McCann (1980).

Considering first the Relationship category, one of the three CES subscales in this category (Teacher Support), significant differences were shown for the three MTAI groups. While at first glance this indicates teaching style may not be associated with the types of relationships established in classes, the fact both of the other subscales in this group probably suffered from ceiling effects (means greater than 8.5 on a 10 point scale) means that a stronger relationship may exist. The results indicate that an "open/nondirective" teacher would attempt to create classrooms with a high emphasis on encouraging and establishing relationships. Even though all types of teachers support their students in class activities, the more open teacher shows more support. Perhaps this difference accounts for some of the different feelings associated with the concern and rejection attitude groups formed on the basis of teacher expectancy and reported by Brophy and Good (1974) and Silberman (1969).

Differences between MTAI groups on the Orderliness/Achievement Climate or Personal Development category, indicate teachers exhibited significant differences in their concern for what students will learn, how they compete to learn, what needs to be learned, and how structured the class is with respect to the attainment of specific educational goals. In all cases, the more open teacher places less emphasis upon an achievement oriented and competitive class. This, however, does not necessarily mean that achievement and personal development are not an important part of the more open class. Both task orientation and rule clarity are rated as significant features of the ideal sociopsychological climate by the open teachers (see mean scores in Table 1). Thus, while achievement is emphasized, it is not in an interpersonally competitive way. Such an interpretation of present results fits with past research showing that students function well in and seem to prefer classes that are demanding yet allow for close class relations and allow all class members to achieve in a cooperative fashion (Johnson & Johnson, 1974; Moos, 1978; Schultz, 1979).

Complementing differences in achievement focus are the differences in the classroom control atmosphere or organizational features of ideal sociopsychological climates. From the results, it may be suggested that a significant aspect of a teacher's attitude toward students is related to the type of classroom control and organization maintained by the teacher. This attitude is based on such features as the number and directiveness of the rules of the class, and on how tightly the teacher directs and controls class activities. Some teachers want a lot of control, some teachers want less control, but all teachers are concerned to some extent with how they will or should control their students (a point particularly emphasized by Cooper, 1979, and Cooper, Burger & Seymour, 1979). The ANOVA results suggest that an open/nondirective teacher would establish less direct control, have fewer restrictions and would have innovative, orderly, and organized classes.

Such control or organizational differences associated with the different teaching styles could be directly related to the "differences in quality" cited by the expectancy research reported by Brophy and Good (1974) and Silberman(1969).

Simultaneously considering the Structural and Achievement Climate category differences, it seems that teachers holding different teaching styles are relatively consistent in their sociopsychological climate preferences and attempt to establish compatible climates. That is, when both achievement and competition are emphasized, the class is structured with high teacher control, clear rules, and an emphasis on order. On the other hand, if achievement and cooperative goal attainment is emphasized, the class is less controlled and an emphasis is placed on innovative and nonrestrictive means for achieving. Though this may lead to a bit more chaos, it is constructive chaos.

Overall, the differences in sociopsychological climates are reflective of the attitudes expressed by the teachers. The more open the teacher, the more open the classroom atmosphere. The only finding that needs further explanation is the high ratings for all groups on the Relationship category dimensions. This could be accounted for by the relatively young age (most under 35) of the teachers and student teachers. This makes them representative of the current emphasis on personalized teaching. However, according to Moos' (1979) review of research, sociopsychological climate emphasis on human relationships tends to facilitate personal growth, but it forms only a necessary, not a sufficient condition for such growth. Such a necessary but not sufficient focus appears to underlie the many differences found here. All types of classes emphasize relationships, therefore, they have all met the necessary condition. However, to be able to enhance personal development and growth, it is necessary to look beyond the Relationship category and be concerned with the achievement climate and with the classroom structure. Perhaps by directly considering these added dimensions of sociopsychological climates, the "qualitative" differences so often alluded to will be predictable and the ATI's that characterize many research studies completed today will be explainable.

The study hypothesized and confirmed that a relationship exists between teaching style and sociopsychological climates. However, wanting to set up different climates (what the ideal form of the CES measures) does not mean the ideal sociopsychological climate will actually be established. Although the teacher is the most significant determiner of sociopsychological climate (Anderson, 1973; Moos, 1979; Walberg, 1977), many other factors affect sociopsychological climates (see Schultz, 1975). Since the present study gives one reason to believe that teaching styles will result in the attempt to establish particular sociopsychological climates, the extent to which this is actually carried out should be investigated in future research. Future research should also focus on obtaining a wider survey of teaching styles and determining if the differences found here are extended. Other topics could include systematically investigating the behavioral characteristics of teaching styles, of sociopsychological climates, and investigating the relationships between teacher expectancy, sociopsychological climate, and teaching style. Such research should help clarify the sought for mediating mechanisms and should therefore further our understanding of how differences in teaching style and teacher expectancy cause differences in student performance and attitude.

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A Possible Path Past Some Personality Study Problems

Some obdurate problems and issues in personality theory and research and the shortcomings of attempts to resolve them are described; an alternative means of grappling with them is outlined. The latter, which entails direct assessment of behavior or the collection of behavioral census data, is illustrated by the description of an exploratory probe. The results of this study of the transsituational consistency of behavioral persistence in 10 male and 12 female elementary school children are reported. Implications of both the behavior census approach and the results of the preliminary probe are discussed with reference to the consistency-specificity issue and personality assessment in general.

Educators and educational researchers generally recognize that personality factors of both teachers and students often mediate and therefore influence educational transactions. Moreover, we have reason to suppose that personal qualities such as the disposition to persist in efforts to overcome difficulties is highly related to achievement in many domains (Goleman, 1980). However, despite widespread and sustained efforts in personality psychology in the last 60 or 70 years, personality is not well understood and the field has come on hard times. While psychological theorists have been developing complex models of behavioral systems involving "multi-directional feedback" (e.g., Bandura, 1977; Endler, 1977), "reciprocal determinism" (Bandura, 1978, 1979), interactive feedback-loops (e.g.,

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Howard, 1979) and so forth, very little progress has been made in understanding the fundamental units in the B = f(P,S) function: the person and the situation. Accordingly, educators and educational researchers are left to attempt interventions in educational transactions by manipulating situational factors without a clear understanding of how these situational factors interact with and influence different persons. Before these complex models of behavioral systems become useful, it is crucial that we acquire a clearer understanding of the fundamental person (P) unit in the classical B = f(P,S) function (or in any of its contemporary transformations whether multidirectional, reciprocal, or interactive) if we are to gain a better understanding of behavior and its development in education (and other) settings. Unfortunately, however, in employing their traditional orientation to personality study, psychologists have not given us much understanding of persons even though personality "science" as we have known it has, apparently, reached its limits (Epstein, 1979; Feshbach, 1978; Fiske, 1974, 1978a, 1978b, 1979; Goldfreid & Kent, 1972; Mischel, 1968, 1977, 1979; Phares & Lamiell, 1977; Sechrest, 1976). Sechrest (1976), for example, summed up the state of the art this way: "most research — the *vast* proportion of research — in personality is inconsequential, trivial and pointless even if it is well done" (p. 2). Helson and Mitchell (1978), two years later, reported that there had been no apparent improvement.

But what is the nature of the limitations of personality psychology? At least five interrelated factors give rise to problems of such magnitude that these problems are probably not surmountable within the framework of orthodox approaches to personality study (cf. Fiske, 1974, 1979). These factors are: (1) the weakness of ties between measures and the hypothetical constructs of highly abstract theories, (2) the lack of predictive power and low reliability of data gathered through indirect assessment (the modus operandi of traditional personality research), (3) problems inherent in nonpublic clinical data as a basis for theory building, (4) limited agreement among theorists about the appropriate conclusions to be drawn from sets of observations, and (5) questionable construct validity due to poor reproducibility of observations either on different occasions or by different observers.

The so-called "interactional" model of personality has been proposed as a way through which our understanding of personality may be significantly increased (Endler, 1973, 1975, 1977; Endler & Magnusson, 1976a, 1976b). Indeed, this model of personality research has gained widespread attention in recent years and some (Endler, 1973) have even claimed that interactionism constitutes a new scientific paradigm in the Kuhnian sense (Kuhn, 1962). However, the interactional model suffers from the same serious shortcomings which were discussed above (Buss, 1977; Howard, 1979; Olweus, 1977; Sadava, 1980). Rather than a new paradigm for personality, interactionism as it is currently employed represents only a small conservative shift from the more traditional personality approaches and seems to have brought more confusion than clarity to personality psychology (Mischel, 1973; Olweus, 1977).

The history of personality psychology is, to a large extent, a history of a continuous debate between those attempting to demonstrate that behavior is situation specific and those trying to show that personality traits show both transtemporal and transsituational stability (Feshbach, 1978). The empirical evidence has, for the most part, failed to provide support for the belief in the transsituational consistencies of behavior which is logically implicated in the trait

position (Argyle, 1975; Bowers, 1973; Mischel, 1968, 1973, 1977, 1979). However, these results may, as has long been suspected (if not demonstrated), be an artifactual result of the indirect assessment techniques involving the use of projectives and other tests and questionnaires with which personality study is undertaken (Tryon, 1979; Goldfried & Kent, 1972; Lamiell, 1981; Wallach & Legget, 1972). This traditional approach has produced only scattered islands of hard data. Sound procedures have rarely been employed and as a consequence, only disparate bits of valid information have been produced. Moreover, the significance of such data is obscure since it is unusual that personality research is solidly attached to significant problems (Mischel, 1977; Epstein, 1979; Feshbach, 1978; Fiske, 1978a, 1979; King, 1978). Those adopting this traditional approach have focused on amorphous poorly-defined traits, constructs, and motives over which agreement on their conceptual nature, on their definitions or standard procedures for assessing them has not been reached. A wide range of assessment procedures, including projectives, dream analysis, free association, interviews, tests and questionnaires, and personality inventories, have been employed. In the recent past psychologists have tended to focus attention on test construction, the reliability of these tests, and methods for analyzing the data, while virtually no attention has been paid to the validity of what is being measured or studied (Fiske, 1979; Jackson & Paunonen, 1980; Lumsden, 1976; Tryon, 1979). As long as this traditional approach to personality study and assessment is maintained, little can be done to overcome the fundamental handicaps which have caused personality psychology to have reached its limits. Accordingly, one can consider the possibility that the formulations and assessment procedures employed heretofore may be inherently inadequate. Furthermore, alternative strategies entailing the formulation of different questions and the employment of different procedures may yield important evidence bearing on the trait-situation issue and other important questions in personality study.

An Alternative Strategy for Personality Study: Direct Assessment

Social-historical analysis of the political economy and behavior within it suggests that personality organization may covary with socioeconomic conditions (Travis, 1975). This suggestion is consistent with the reports emanating from such diverse sources as the Frankfurt School (e.g., Fromm, 1962) and the social learning tradition (e.g., Bandura & Walters, 1963; Bandura, 1977). More recently, Feshbach (1978) has made the same proposal. He said, "I propose that the consistency and organization of personality will vary as a function of socioenvironmental factors" (p. 449).

From this perspective, within-culture variations such as position in an uneven distribution of power (i.e., class position) may produce not only class differences but individual differences in response consistency. Again, Feshbach (1978) seems to be coming around to this viewpoint, too:

> The degree of specificity or generality found in the population as a whole will depend upon the relative proportions of those individuals whose behavior tends to be situation-specific and those whose behavior reflects more generalized dispositional traits. This mix will in turn depend upon variations in features of the sociocultural environment that affect the integration and organization of behavior. (p. 449)

Thus one could ask the basic question, "What conditions foster continuity and organization in behavior and what conditions foster discontinuity and segmentation?" (Feshbach, 1978, p. 449). And one could attempt to answer this question by adopting a strategy which has received too little attention in

personality research: one would observe, record, and classify behavior of people directly in circumstances of particular interest. One would, as has been recommended with increasing frequency, accumulate behavioral census data (Elms, 1975; Fiske, 1974; Goldfried & Kent, 1972; Phares & Lamiell, 1977; Sechrest, 1976).

In this approach then, behavior must not be merely regarded as a sign or test of underlying dispositions, but must become the primary unit of interest. From this perspective, attempts to look inside the organisms, via signs and tests, as personality theorists have attempted to do for so long, are merely diversions and digressions because, as Skinner (1975) noted:

> When the important thing is a relation to the environment, as in the phylogeny and ontogeny of behavior, the fascination with an inner system becomes a simple digression.... We have not advanced more rapidly to the methods and instruments needed in the study of behavior precisely because of the diverting preoccupation with a supposed or real inner life. (p. 46)

In consonance with Skinner's analysis, recent developments indicate that a reconceptualization of personality in terms of behavioral styles may be a promising way to gain a more complete understanding of human personality. Since measurement in this conceptual framework is of behavior per se, rather than of amorphous hypothetical constructs, the connection between theory and measurement may be made more readily. Accordingly, the major difficulties of traditional personality psychology may be avoided.

From the accumulated evidence, it seems to be suggested that at the most general level of analysis, one binary typology of personality based on behavior of interest has emerged from disparate sources. Thus, notice can be taken of MacFarlane's (1963, 1964, 1975) reports on longitudinal studies in which a large sample of subjects were studied from infancy to adulthood, and wherein the most consistent dimension obtained by clusters of variables over a long time span (2 to 16 years) related to styles of behavior: namely, "reactive-expressive" and "retractive-inhibited." Consistency and predictability were otherwise low for every other indirectly assessed personality dimension. In this same stream, Campus (1974) showed that individuals can be found to vary in behavioral consistency so that each can be classified as representing one of two styles: (a) an active coping style; and (b) a passive coping style. Similarly, Salter (1961) spoke of two major categories of personality which he called the excitatory and the inhibitory personality. The excitatory person, wrote Salter, "is direct. He responds outwardly to his environment. When he is confronted with a problem, he takes immediate action" (p. 45). The inhibitory personality, on the other hand, displays an undue "desire for acceptance by his environment" (p. 48). According to this conception then, an excitatory person *acts* on his environment to transform unpleasant and bothersome conditions while the inhibitory person *acquiesces* to environmental conditions in an attempt to cope with bothersome or noxious stimuli or he may withdraw from these conditions altogether.

Seligman (1975) and Travis (1975), moreover, both have provided evidence that sheds further light on this "active-passive" personality dimension. Seligman (1975) suggested that because of an inability to control certain events, people learn to behave helplessly in the face of these events and hence make no attempt to change them. When events are noncontingent upon attempts to manipulate aversive stimulation, helplessness is learned. Furthermore, Hiroto and Seligman (1975) suggested that learned helplessness generalizes from one situation to another. That is, failure to control events in one stimulus setting produces

"helplessness" behavior in other settings. The implication here, then, is that because of repeated experience of impotence in changing or altering certain environmental conditions, individuals will adopt a general style of helplessness or withdrawal in adapting to their environment (Abramson, Seligman & Teasdale, 1978; Miller & Norman, 1979). The economist Galbraith apparently observed something of this sort in conditions of enduring poverty (Goodman, 1979, pp. 118-119).

Travis (1975), in a detailed analysis of political activism, showed that some people readily participate and actively engage themselves in attempts to change, via political activism, the social milieux in which they live. Meanwhile, the vast majority of others simply withdraw from, or acquiesce to, and become passive with respect to the same unpleasant conditions. Moreover, Travis (1975) observed that usually those people who readily intervene in existing arrangements to bring about change, can best be characterized as being generally "wealthier, better educated, politically and culturally critical, articulate, expressive and deviant in a progressive direction" (p. 45) than are the passive noninterventionists. Generally, the active elites in political matters, are those who possess wealth; and since wealth confers power on its possessor (e.g., Travis, 1979) we might expect wealthy (and hence powerful) people to exhibit personalities which are distinguishable from those of their less powerful counterparts. The wealthy generally do not learn helplessness, perhaps because, as suggested by Travis (1975), "the possession of power enables one to produce effects. People who possess such power might be expected to acquire the habit of using it" (p. 259). Since changes resulting from the exercise of power apparently are, frequently, reinforcing, we might expect an increase in the probability that such instrumental behavior will recur after a reinforced action. The less wealthy (and hence less powerful) people in society are regularly ineffectual in gaining changes in conditions that are unpalatable to them (Goodman, 1979; Griffith, 1970) and hence may not acquire the habit of behaving in an active, instrumental way.

These conditions, then, provide some bases for an account of how people can vary along a "passive-active", "approach-withdrawal", "inhibitive-expressive" personality dimension defined with reference to directly observable behavior. These and other sources of evidence indicate that there is good reason to cast personality in terms of behavioral styles. Since behavior is an observable event rather than a hypothetical construction, it can be assessed *directly* thereby avoiding the measurement problems of the trait and psychodynamic models of personality. But since it has been demonstrated repeatedly with reference to *indirectly* measured traits, that people do not respond consistently either over time or in different situations, the first issue that must be addressed is that of the consistency of *directly* measured behavior. That is to ask, how consistently do people behave when we make *direct* observations of their conduct in a variety of situations?

Since the contrasting styles of adapting to taxing situations which have been discussed above seem to be related to or entail differences in behavioral persistence, the authors thought that questions of the foregoing nature might be addressed appropriately by an exploratory study of the consistency with which given persons exhibit behavioral persistence in a variety of situations. Furthermore, we thought that this sort of exploratory study might provide a means of deriving some preliminary indication of the character of data which might be yielded by large-scale studies entailing the direct assessment of

behavioral continuities and discontinuities across situations. Specifically, an exploration of behavioral persistence in three different situations was assumed to be a reasonable way of exploring the merits of undertaking large scale direct assessment studies of behaviorally defined personality dimensions. It was assumed that the extent of intrasubject consistency of behavioral persistence across three situations would be indicated by the extent to which inter-subject rank order of behavioral persistence in each of these same three situations was maintained. The calculation of intercorrelations (Pearson's *r*, in this case) was taken to be an adequate means of assessing the degrees of relationship.

We hypothesized that when we define personality dimensions behaviorally and assess them directly we could expect that the indices of cross-situational consistency of behavior would exceed the usual ±.30 correlations (Mischel, 1968) which define the mean degree of relationship yielded by studies of the more usual sort (entailing the indirect assessment of personality constructs). Furthermore, if such indices yielded by correlational analysis uniformly exceeded the ±.30 level, we would take this as evidence that this exploratory study thereby would provide justification for expending greater time and resources on large scale studies designed to explore the viability of conceiving personality in behavioral terms and studying it directly.

The object of the study described below was, then, to assess the trans-situational consistency of behavioral persistence of primary school children by intercorrelating the rank orders of their behavioral persistence scores from three different situations.

Method

Subjects

A complete set of data for 22 of 48 children enrolled in the second grade of a public elementary school in east Vancouver was procurable: due to absenteeism and the failure of some parents to indicate consent for the participation of their children, only partial data or no data were available for the remaining 26 children. However, since there was no apparent basis for suspecting a systematic effect (especially of a unidirectional sort) due to this sample diminution and since this initial study was an exploratory venture, the complete data yielded from the 22 pupils was deemed to be adequate for present purposes. Accordingly, 10 males and 12 females participated. Their ages ranged from 79 to 109 months, with a mean age of 95.46 months and a standard deviation of 6.79 months.

Procedure

All pupils were exposed to three different situations wherein an index of behavioral persistence was procured (as described below).

Situation 1: All participants encountered the same paper and pencil maze problem in a group context. The children were instructed to trace a line beginning at a point indicated by the sign *Start* and continuing through the appropriate channels to a point indicated by the sign *End*. The maze was judged by both their teachers and the two experimenters to be too difficult for the capabilities of children of this age range. This assumption was supported by the fact that no child successfully completed the maze. The following instructions were given to all the pupils:

> Here is a puzzle. I would like you to try and solve it. The puzzle you have is like this one (indicating a large version of a similar maze which was affixed to the front chalkboard). You can start here (indicating the start) and trace along the paths to the centre where you will find the treasure. These (indicating unbroken lines) are fences and these (indicating breaks on the lines) are gates. You can go through a gate but not through a fence. Can I go here (indicating a solid line)? No. Can I go here (indicating a break in a line)? Yes. Now watch carefully as I find the treasure in this puzzle. (Pause for demonstration.) I want you to find the treasure on your maze. When you have found the treasure on the first maze or when you have tried your best to find the treasure, turn the page over and try to find the treasure on the second maze. Now you may begin.

Time working on the first maze, operationally defined as beginning with the "begin" signal and terminating when the page turned over (a different maze was printed on the reverse side of the page), was taken as an index of behavioral persistence. Two experimenters, each with a stopwatch and a seating plan of the classroom, recorded the times.

Situation 2: Each child was brought to a private room (with only one experimenter present) and was there asked to solve a wire puzzle. The solution of the puzzle occurred when two metal rings were taken apart. This task was also judged to be difficult beyond the pupils' capabilities and this assumption was again supported by the fact that no child successfully solved the puzzle. The following instructions were given to all children :

> Here is a sheet of paper. On the paper I would like you to fill in the blanks with your name, whether you are a boy or girl, your age and your birthday. (After the child had completed the task as described, the experimenter proceeded with the following remarks:) On this page I would like you to draw a picture of a man. Draw the best man that you can. But first I would like you to try and solve this puzzle. Now watch carefully as I take the rings apart. See how easy it is! I will put them together again. Now once more — here is how they come apart. See, I didn't force them or bend them. You must not force them because that is cheating. They come apart easily if you do it right. Remember, no forcing. When you have taken the rings apart or have tried your best to take them apart, put them down here and go ahead and draw the picture of the man. You may begin now — here are the rings.

Time attempting to solve the puzzle was operationally defined as beginning when subjects received the rings and terminating when they put them down on the table. Again, time on-task was the measure of behavioral persistence.

Situation 3: While seated in a private room with only one experimenter present, each child was asked to reproduce, to the best of his abilities, a printed colour picture. The following instructions were given to each subject:

> I would like you to listen to a tape on this cassette recorder. There are funny jokes and music on the tape. I would like you to listen to the music and the jokes and tell me if you like them. But first, I would like you to draw a picture. Here is a picture in this book that I would like you to draw. We are having a contest to see who can draw a picture that looks the most like this one. The child who draws a picture that looks most like this one will win a surprise prize. Here is a sheet of paper and here are some crayons. When you have drawn the best picture that you can, you may listen to the tape. You may begin.

Time on task was operationally defined as beginning when each pupil put the crayon on the paper and terminating when he or she declared completion. Time on task was, as before, taken as the index of behavioral persistence.

Results

In order to gain an estimate of the degree to which the rank orders of behavioral persistence of the three situations were related, three correlations (Pearson's *r*) were calculated (for Situations 1 and 2; 1 and 3; 2 and 3). The intercorrelation matrix produced on the aggregate data from the three situations is represented in Table 1. The ranges of time on task are also shown in Table 1.

TABLE 1

CORRELATION MATRIX FOR BEHAVIORAL PERSISTENCE OF CHILDREN IN THREE SITUATIONS AND RANGES OF TIME ON TASK

A. Correlation Matrix

	Situation 1 (Maze)	Situation 2 (Puzzle)	Situation 3 (Picture)
Situation 1 (Maze)	--	.81	.48
Situation 2 (Puzzle)		--	.56
Situation 3 (Picture)			--

B. Ranges of Time on Task

	Minimum (secs)	Maximum (secs)	Range
Situation 1	176	1278	1102.0
Situation 2	144	1096	952.0
Situation 3	732	4745	4013.0

The coefficients obtained in this study (r_{12}=.81, r_{13}=.48, r_{23}=.56) are indicative of a comparatively high consistency of behavioral persistence across the different situations. The magnitude of the correlation coefficients is worth noting since all exceed the usual mean correlations from indirect assessment of ±.30. Thus, these data indicate that the transsituational consistency of behavioral persistence in relation to the situations described is remarkable when compared to the usual data produced by indirect assessments.

Discussion

While the study described above is only an initial probe, and its data must be viewed with the caution which exploratory studies warrant, it does suggest that further studies of this sort may contribute to the resolution of some obdurate problems in personality research. Although the number and variety of situations entailed in this study were limited, as was the content of personality studied, the magnitude of correlations between the directly measured instances of persistence uniformly exceed those reported from conventional studies which employ indirect assessment procedures—whether they are limited in similar ways (as is frequently the case) or not.

Of course, one might argue that the results of the present study are a consequence of the fact that the situations may have entailed or shared common elements. For instance, no time constraints were placed on performance in any of the situations and all performances were initiated by adults. Moreover, one might suggest that while the materials, task requirements, social contexts, and other situational features were clearly different in situations 1 and 2, these differences may be unimportant. These differences may be neutralized by features of the two situations which can be equated and which might thus elicit a similar disposition, set, or interpretation which mediates duration of behavior or effort. From this perspective, if the children interpreted situations 1 and 2 as being, for example, instances of problem-solving situations, then the high degree of relationship between their behavioral persistence in the two situations which was observed (r_{12}=.81) could be regarded as an artifact of such interpretations on the part of the children. Moreover, the third situation entailing the picture reproduction contest might be expected to correlate less highly with the first two (as was the case: r_{13}=.48; r_{23}=.56) since it could be less easily construed as a problem-solving situation. Clearly, interpretations of the foregoing sort cannot be rejected with complete confidence at this time. However, it should be noted that if a person's interpretations of the situations are critical determinants of performance, and the degree of relationship between performances is positively related to the extent to which successive situations are interpreted as instances of a kind, one would expect to find far more stable and higher magnitudes of relationship between performances entailed in indirect personality assessment situations which entail the use of tests. Presumably, behaviors in testing situations should correlate as nicely with one another as behaviors in problem-solving situations are expected to do if the argument behind this interpretation is correct. Since they do not produce high and stable correlations, the merits of this interpretation are not especially compelling at this time.

Nevertheless, we do not know the extent to which behaviors will correlate when they are directly observed in situations which are more numerous and diverse than was the case in the present study. Future research should be designed to answer this question. Adult initiation of performance was an element common to the three situations in the present study. Accordingly, behaviors in situations which do not entail adult initiation should be observed along with behavior of the sorts described in this study. Should correlations between such nondirected, spontaneous behavior (which might be observed both inside and outside of school settings) correlate less highly with the behaviors examined in the present study than did the latter with one another, the limits to the generality of the present results will be clarified.

Although the central limitations of the present study derive from its limited number and variety of subjects, situations, and personality contents, the study does give initial indications that behavioral persistence is somewhat more stable than might have been supposed heretofore. Moreover, the contrasting results that have been produced previously may be, as has long been suspected, artifacts of the paper and pencil assessment techniques. Thus, there is not only a theoretical basis for attempting to assess directly personality as behavior, but also a basis for supposing that behavioral patterns or styles may emerge from such data. As well, these patterns may show much higher transsituational consistency than the conventionally gathered data such as those examined by Mischel (1968) would

suggest. In addition, the data reported in the present study have implications for the way one assesses the interactionists' work.

In their attempts to reconceptualize personality psychology, both Endler (1977) and Magnusson and Endler (1977) as well as Rushton and Endler (1977), suggested that the consistency of mediating or intervening variables depend on whether such variables are content, structural, or motivational in nature. Content variables refer to situationally determined information (e.g., the content of anxiety arousing situations); motivational variables refer to motives, drives, needs, and the like; and structural variables refer to information processing variables such as intelligence. These researchers asserted that structural variables show high transsituational consistency while content and motivational variables are situation specific. Although it might be argued that structural variables (for example, visual acuity or I.Q.) have some effect on behavioral persistence in the situations described above, the majority of influence on the measured variable should be, according to the Endlerian scheme, exercised by content (e.g., group task vs. individual tasks) and motivational variables (reward situations vs. no-reward situations). According to this scheme then, behavioral persistence as measured in the present study should be highly situation specific. However, from the results reported here, this hypothesis is not supported. Accordingly, the adequacy of the Endlerian scheme must await further investigation, especially of the type discussed in this paper. Further studies of this type might well include provisions for the study of how sex, abilities, socioeconomic class and other sociocultural variables relate to the personality dimensions under study. Developmental variability might well be explored with profit as well. Meanwhile, we have reason to wonder whether the person is as superfluous as has been claimed in recent times (e.g., see Feshbach, 1978, p. 448).

In conclusion then, it is suggested in this study that assessment of personality in terms of directly observable behavior looks promising. The most obvious limitation of the present study is that it is a small exploratory beginning. However, it does provide us with an example of how future research may be conducted. Such research is in consonance with the proposals which have been made by others (Epstein, 1979; Fiske, 1974, 1978b; Mischel, 1977) who seem to share our view that such work may help us to eventually circumvent some of the endemic difficulties of traditional personality assessment and research. The systematic observation and classification of human behavior, which is socially significant and which occurs in situations of particular interest, may provide a useful direction for the building of a solid data base. Admittedly, this is no easy task. It is expensive with respect to both time and effort. However, the results of the exploratory study reported here constitute one sign that such work is a promising beginning.

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Effects of a Bilingual Instructional Program on Conceptual Development in Primary School Children

Children who are fully bilingual seem to have some cognitive advantages over their monolingual peers. The purpose of this study was to investigate whether these advantages would extend to children who had been in a bilingual instructional program for three years or less. Grade one, two, and three children in both an English/French bilingual program and in a regular English program were tested on their ability to conserve number and measurement, on their use of reversibility as a rationalization for conservation, and on the number of different rationalizations given for conservation. When readiness scores were controlled, the bilingual children significantly outperformed their monolingual peers on one subtest of both the number and the measurement concept test and on the use of reversibility as a justification for conservation.

Bilingual education takes place in many contexts in North America. There are English/French, English/Ukrainian, English/Russian, English/German, and English/Spanish bilingual classes, to name a few. Furthermore the term "bilingual class" has different meanings for different people. Some use that term to refer to programs involving total immersion in a second language while others restrict it to cases where two languages are used more or less equally for instructional purposes. The study reported here took place in the context of an English/French bilingual program where 50-60 percent of the instruction was in French and about 40-50 percent in English. This context was chosen simply because, in Edmonton, it was the most common program to which the researcher had access.

It would seem to be indicated in recent studies (Bain, 1975; Cummins & Gulutsan, 1974; Jacobs & Pierce, 1966; Peal & Lambert, 1962) that fluently bilingual children have some cognitive advantages over their unilingual peers.

George Cathcart taught in elementary and junior high schools in Edmonton before receiving his PhD from the University of Alberta in 1969. Since then he has been on staff in the Department of Elementary Education at the University of Alberta, teaching courses in mathematics education. Dr. Cathcart's interest in the formation of concepts in children in bilingual classes is partly a result of his two children going through the English/French bilingual program from K-6.

Some of the advantages suggested by the above writers include greater "cognitive plasticity," higher scores on standardized tests, and a greater ability to think divergently. These and/or other advantages also seem to accrue to children who are enrolled in a bilingual instructional program. Unless otherwise indicated, all future references will be to children in a bilingual program rather than fluently bilingual children.

Evaluation of Bilingual Programs

Bilingual instructional programs in Canada have been very carefully evaluated. Much of this evaluation has been for the purpose of establishing that children in the bilingual programs achieve as well as their unilingual counterparts in designated areas of school instruction. For example, the first purpose of the second year evaluation of the Edmonton Public Schools English/French bilingual program was to answer the question, "Are the pupils in the program achieving at a level appropriate to their ability on standardized mathematics and reading achievement tests?" (p. 1.). Similarly the first question posed by the Toronto Board of Education regarding the program at the Allenby Public School was

> Does instruction of the prescribed curriculum through the medium of a second language (French) have any harmful effects on native language (English) skills, on achievement in such basic academic skills as reading and arithmetic, or on pupils general cognitive development, as measured through IQ tests? (Barik & Swain, 1976b, p. 41)

Cognitive development has been another major focus of recent research involving bilingual programs. Valencia (1976), from studies of Spanish/English bilingual programs, comes to the conclusion that bilingual education effects a dramatic and progressive trend in the cognitive development of children.

Lambert, Tucker and d'Anglejan (1973) in their continuing evaluation of the St. Lambert Project through grade 5, found that the experimental children outperformed the control children on all intelligence scales though none of the differences was statistically significant. Statistically significant differences were found, however, on tests of number sequence and unusual uses. The differences were in favor of the bilingual classes. Barik and Swain (1976a), in a longitudinal study of a French immersion program, found statistically significant IQ differences only between low and high French achievers in the program when initial IQ differences were controlled.

In a second language program where children began in grade one but had only 20-45 minutes of second language instruction per day, Landry (1974) found that grade 6 children in the second language program were superior to control children in their ability to think divergently. There were no differences at the grade 1 level. At grade 4, the differences showed a trend in favor of the experimental group but not a statistically significant difference. This and Barik and Swain's (1976a) study support Cummins' (1977) position that a threshold of competence is needed before differences emerge. Cummins hypothesizes that

> there may be a threshold level of linguistic competence which a bilingual child must attain both in order to avoid cognitive deficits and allow the potentially beneficial aspects of becoming bilingual to influence his cognitive growth. (p. 10)

Clearly this threshold level will vary depending upon a number of variables not the least of which is the amount of time spent in the second language. If the trend observed by Landry (1974) was observable in programs where second language instruction was given for only 20-45 minutes per day, it could be observable

earlier in programs where more time is devoted to the use of the second language and thus this research focused on grades 1 through 3. In the bilingual programs sampled for the research reported here, the second language was used as the language of instruction for 50-60 percent of the school day.

Concept Formation and Bilingual Education

Concept formation in this study is defined as responses to Piagetian-type tasks. Research in this context has been well reviewed in many publications, articles, and dissertations. (For example, see Copeland, 1979; Harrison, 1967).

Very little research has focused on the effect bilingual instruction might have on the formation of concepts such as number and measurement. The Edmonton Public School Board (1977) evaluation of both the English/Ukrainian and the English/French programs indicates that children in the bilingual programs do as well as or better than their monolingual controls. Only in the English/French program was an attempt made to assess effects of the program on cognitive development. Using a Piagetian test of conservation, the evaluators found no significant differences between the bilingual and control students in grades one and two.

Liedtke (1968) did not use children in a bilingual instructional program but rather children who were completely bilingual. However, his study has relevance to the research reported here because he compared 50 monolingual with 50 bilingual grade one children on their development of linear measurement concepts. He found that

1. bilingual children are more advanced than monolingual children in their understanding of linear measurement ideas,
2. conservation of length was developed to a greater extent in bilinguals than in monolinguals,
3. the bilingual children demonstrated a greater ability to make linear measurements.

According to Piaget (1960), there are three thought processes or rationalizations which a child may use to arrive at the conservation response. The first, reversibility, is illustrated by the statement, "If you moved it back to where it was before it would be the same." Identity, the second type, is characterized by the statement, "You didn't add anything to it or take anything away, so it is the same." Piaget calls the statement, "This one is longer here but it is shorter here, so it is the same," a "combination of compensated relations," or more simply, "compensation." Cathcart (1969) studied the kinds and variety of rationalizations that grade one, two, and three children give for a conservation response to a Piagetian test item. Most children preferred identity arguments but those who used reversibility arguments had higher scores on mathematics tests and on the conservation test. Furthermore, children who used more than one kind of rationalization were superior in mathematics ability and achievement, as well as in their ability to conserve number and measurement. For the 1969 study Cathcart divided Piaget's "Identity" rationalization into two categories, substantive identity and operational identity. Substantive identity occurs when conservation is rationalized on the basis that the invariant transformation has not changed the characteristics of the objects exhibiting the property. Operational identity involves conservation that is rationalized with an argument to the effect that the invariant transformation has not added to or subtracted from the property in question. This same scheme was used in the current study.

Cognitive development can be influenced by four major factors, according to Piaget (1967). These are maturation, experience with the environment, socialization, and the process of equilibration. Two of these factors, experience and socialization, are external (cultural) rather than genetic. Bilingual instruction is one way in which these two cultural factors may vary for different individuals. This difference in experience may well affect the formation of concepts.

Rationale for the Study

A summary of the previous section provides a succinct rationale for the study reported here. Bilingual children seem to have some cognitive advantages over their monolingual peers. In research on bilingual instructional programs, it seems to be indicated that children in these programs (at least after some time in the program) also have some cognitive advantages over children who take all their instruction in one language.

The nature of one's experience also seems to affect concept formation and cognitive development. Since children in bilingual and monolingual programs have different experiences, it may be that there are differences between these two groups in both concept formation and cognitive development.

Hypotheses

Specifically, three major hypotheses are examined in this report.

1. There is no significant difference between children in English classes and children in English/French bilingual classes in their ability to conserve number less than 10, number greater than 10, number in an additive rearrangement, quantity, length, area, mass and volume.
2. There is no significant difference between children in regular and bilingual classes on the number of rationalizations given for a conservation response.
3. There is no significant difference between children in regular and bilingual classes on the kinds of justifications given for a conservation response.

Procedures

Sample

The sample consisted of 192 children from four schools. Eight children (4 boys and 4 girls) were randomly selected from each program (English/French bilingual and regular English) at each of grades one, two, and three in each of the four schools.

None of the children was completely bilingual and all of the grade two and three children had been in the program from at least grade one and most had been in it from kindergarten.

Instruments

A 16-item conservation test was designed by the researcher. This test had eight subtests (see hypothesis 1) of two items each. All items were conventional Piagetian-type tasks used in numerous other studies. For example, one of the two length items was structured as follows. The subject was presented with two

equivalent strips of paper about 20 cm long. The strips were placed parallel with their ends aligned as shown below.

The child was then asked, "Is this one (pointing to one paper) longer or is this one (pointing to the other) longer or are they both the same length?" Usually the subject responded that they were the same length. Then the child was asked to watch while the researcher pushed one strip ahead a few centimetres as shown below.

The subject was again asked, "Is this one longer or is this one longer or are they still the same length?"

The subtests were randomly assigned to subjects so that no two children received the subtests in the same order. Also several items where the property was not conserved were randomly inserted to avoid a response "set" on the part of the child.

Although the Piagetian method of questioning is not a standardized technique, the type of question asked to elicit the conservation response is not a significant source of variance. This has been established in studies by Pratoomraj and Johnson (1966) and by Mermelstein and Shulman (1967). However, obtaining the rationalization may be a more sensitive process because it involves a greater degree of verbalization by the child. Therefore a uniform procedure was developed which is described in the next paragraphs.

The question, "How can you tell?" at the end of each item of the conservation test was the stimulus for the child to give his rationalization. If he did not give a conservation response he may or may not have been asked this question. If he did conserve he was, of course, asked the question. Two possibilities existed at this point.

1. The child gave a rationalization. Some neutral comment such as "I see" was made and then the subject was asked, "Is there any other way that you can tell that they are still the same?" If another response was given, no further responses were asked for. If a second response was not started within approximately ten seconds the experimenter said, "That is fine" and proceeded to the next item.
2. The child did not respond to the initial question. In this circumstance he was asked other non-directive questions such as, "Why is it that these are still both the same?" or "Why is this one (pointing to the transformed state) the same as this one (pointing to the standard)?" If the child still did not respond the experimenter proceeded to the next item. If a rationalization was given then a second response was requested as in situation 1. If the subject was hesitant but did respond he was given an encouraging comment such as "Good" but no further rationalizations were requested.

At no time was a third response asked for although some responses had two or more rationalizations embedded in them.

A subject was never pressed for an answer beyond what was described in situation 2 above.

Each rationalization was coded as one of (1) operational identity, (2) substantive identity, (3) reversibility, (4) compensation, or (5) other according to the scheme used by Cathcart (1969) based on Piaget (1960) and mentioned in the background section of this paper.

Percentile scores on the Metropolitan Readiness Test were collected from the school records and used as a covariate. These scores were used because they were available for most students in grades two and three whereas IQ scores were frequently not available. The Metropolitan Readiness Test was administered by the school staff sometime during the grade one year.

Testing

Two graduate assistants and the researcher tested all children individually over an eight-week period in early 1979.

Reliability

No estimate of reliability for the conservation test was calculated. Twelve of the 16 items came from Cathcart (1969) who reported a test-retest reliability of 0.923. The four added items have been used in many studies involving conservation. It was therefore assumed that the reliability would still be reasonably high.

Of greater concern was the degree of consistency among the three data collectors in coding the rationalizations verbalized by the subjects. To check this, three pupils (two grade 3 and one grade 2) were tested. Each member of the team tested and coded the responses of one pupil while the other team members sat silently and just coded the responses. This provided a maximum of 9 intercoder comparisons per item for each rationalization given. The Arrington formula (Feifel & Lorge, 1950), $2a/(2a + d)$ where a refers to the number of agreements and d to the number of disagreements was used as a measure of intercoder reliability. Over the 16 items there were 105 agreements and 28 disagreements resulting in an Arrington reliability of 0.88.

After testing the three children, the 28 points of disagreement were discussed and resolved so that there should have been a high measure of consistency for the final testing.

Analysis

Children who experienced difficulty often transferred out of the bilingual program or never registered in it. Therefore the "better" pupils were in the bilingual program. It was necessary, therefore, to use the readiness scores as a covariate. Unless otherwise indicated all analyses involved a three way analysis of covariance, grade x program x sex. Since there was no covariate score available for grade 1 subjects, the analysis of covariance was done with grade 2 and grade 3 subjects only. There was a total of 16 subjects per cell in the 2 x 2 x 2 ANCOVA.

Results

Effects of Program on Concept Formation (Hypothesis 1)

One major purpose of the study reported here was to examine the effect of a bilingual instructional program on the formation of number and measurement concepts. A summary of the results of the analysis of variance adjusted for readiness scores is provided in table 1.

TABLE 1

F VALUES FROM ANALYSES OF COVARIANCE ON CONCEPT FORMATION TESTS

TEST	MAIN EFFECTS			INTERACTIONS			
	Grade (G)	Program (P)	Sex (S)	GXP	GXS	PXS	GXPXS
NUMBER							
Number<10	NS	NS	NS	NS	NS	NS	NS
Number>10	4.70*	NS	NS	NS	4.01*	NS	3.95*
Additive rearrangment	8.59**	4.42*	NS	NS	NS	NS	NS
Quantity	8.64**	NS	NS	NS	NS	NS	NS
Total Number	11.87**	NS	NS	NS	NS	NS	NS
MEASUREMENT							
Length	NS	5.69*	NS	NS	NS	NS	NS
Area	NS	NS	5.77*	NS	NS	NS	NS
Mass	NS	NS	NS	NS	4.32*	NS	NS
Volume	NS	NS	5.16*	NS	NS	NS	NS
Total measurement	NS	NS	4.50*	NS	NS	NS	NS
TOTAL CONSERVATION	7.70**	NS	5.58*	NS	4.00*	NS	NS

* P<0.05
** P<0.01
NS Not Significant

TABLE 2

ADJUSTED MEANS ON ALL VARIABLES

Variable	Grade 2	Grade 3	English	Bilingual	Boys	Girls
Number<10	1.89	1.93	1.89	1.93	1.89	1.93
Number>10	1.89	1.99	1.93	1.96	1.98	1.91
Additive Rearrangement	1.39	1.78	1.45	1.75	1.70	1.49
Quantity	1.65	1.91	1.79	1.79	1.85	1.73
Total Number	6.81	7.61	7.06	7.43	7.43	7.06
Length	1.63	1.76	1.56	1.85	1.72	1.68
Area	1.58	1.68	1.66	1.61	1.80	1.48
Mass	1.63	1.73	1.68	1.67	1.72	1.64
Volume	1.67	1.81	1.72	1.76	1.87	1.62
Total Measurement	6.48	6.97	6.62	6.87	7.11	6.40
Total Conservation	13.29	14.59	13.69	14.29	14.54	13.46
Second Rationalizations	5.28	7.26	5.56	7.15	7.64	5.09
Operational Identity	17.01	18.34	16.99	18.48	17.82	17.62
Substantive Identity	4.06	6.17	5.46	4.89	5.01	5.34
Reversibility	4.19	5.54	3.48	6.42	6.20	3.68
Compensation	2.59	1.93	2.34	2.13	2.93	1.59

Program effects were observed on only two subtests; one involving number and the other a measurement subtest. The adjusted means on the additive rearrangement subtest were 1.75 for the bilingual sample and 1.45 for the English sample. On the length subtest the bilingual sample had a mean of 1.85 compared to 1.56 for the monolingual classes. While these two subtests were the only ones on which a statistically significant difference was observed it was noted that on the 11 scores the adjusted means for the bilingual sample were higher than the corresponding means for the English sample on eight of the tests, the reverse was true for one subtest (area) and the two groups had identical adjusted means on two tests. The adjusted means on all variables are summarized in table 2. (Raw means and standard deviations for both program groups at each grade level appear in tables 4 and 5).

Effects of Program on Cognitive Functioning (Hypotheses 2 and 3)

After each conservation response the subject was asked questions like "how can you tell?" and "is there any other way you can tell?" Responses to the first question were coded by the experimenters into one of the five categories outlined earlier in this report. Responses to the second question provided a count of the number of second rationalizations given over all 16 test items.

Table 3 contains a summary of the analysis of variance adjusted for scores on the Metropolitan Readiness Test.

TABLE 3

F VALUES FROM ANALYSES OF COVARIANCE ON COGNITIVE FUNCTIONING VARIABLES

VARIABLES	MAIN EFFECTS			INTERACTIONS			
	Grade (G)	Program (P)	Sex (S)	GXP	GXS	PXS	GXPXS
Number of second Rationalizations	4.87*	NS	8.33**	4.80*	NS	NS	NS
Operational identity	NS	NS	NS	NS	NS	NS	NS
Substantive identity	NS	NS	NS	NS	NS	NS	NS
Reversibility	NS	4.79*	4.06*	NS	NS	NS	NS
Compensation	NS	NS	5.60*	5.48*	NS	NS	NS

* P<0.05
** P<0.01
NS Not Significant

The greater the number of second rationalizations a child was able to give, the more it was considered to be an indication of greater cognitive flexibility which according to Bain (1975) is greater in completely bilingual children than in monolinguals. The difference in the unadjusted means of 7.34 for the bilingual classes and 5.38 for the English classes was statistically significant at less than the 0.001 level. However, the adjusted means of 7.15 and 5.56 were not significantly different statistically.

Since there was a significant grade by program interaction a separate two-way (program x sex) analysis of covariance was run for the grade two and grade three samples separately. The interaction using the adjusted means from the three way ANCOVA is illustrated in Figure 1.

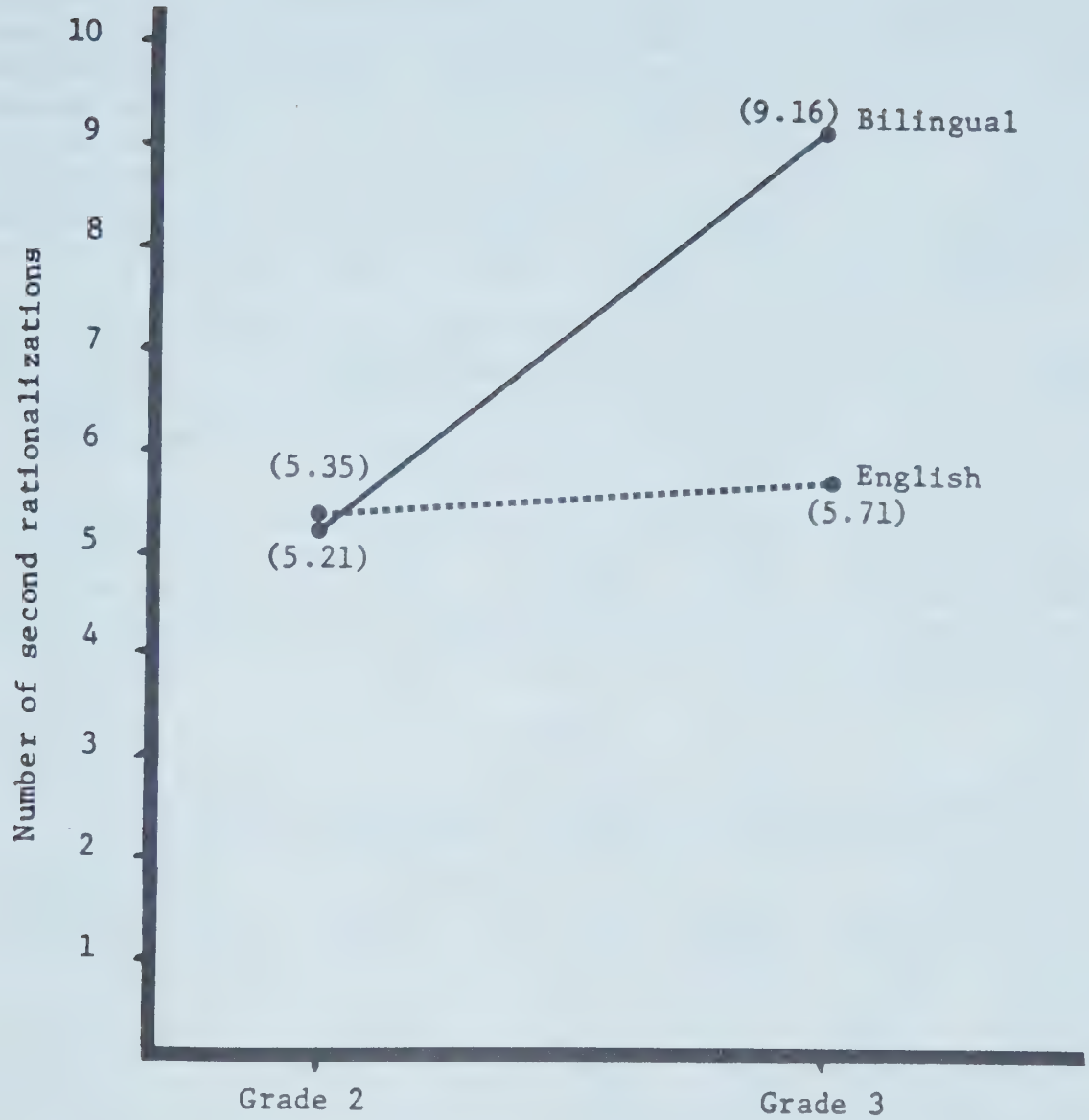

Figure 1. Interaction between grade and program on number of second rationalizations.

The separate two-way ANCOVA's produced the expected results. There was no difference at the grade two level but the adjusted means were significantly different ($p = 0.004$) at the grade three level.

The kind of rationalization that a child gives for conservation may be another indicator of level of cognitive functioning. It was found in an earlier study (Cathcart, 1969) that children who used reversibility-type arguments were significantly better conservers and also tended to do better on other variables as well. Piaget (1960) would support this when he claims that reversibility is the key to the acquisition of conservation. In the study reported here, reversibility was the only type of rationalization on which the bilingual and regular English classes differed. When readiness scores were controlled the bilingual classes scored significantly higher ($p<0.05$) than the English sample. The adjusted means were 6.42 and 3.48 respectively.

Other Effects

While the focus of this article has been on program effects, the grade and sex differences indicated in tables 1 and 3 should at least be mentioned. The results

reported in tables 1 and 3 include only grade two and three subjects since readiness scores were not available for the grade one sample. The significant differences reported in tables 1 and 3 are all in favor of the grade 3 subjects. With respect to concept formation variables (table 1), it is interesting to note that the differences were all on the number section and the total test and that no significant grade differences were observed on the measurement subtests. This may have been due in part to the overall lower scores on the measurement items which was expected since children normally conserve measurement concepts somewhat later than number concepts.

On the cognitive functioning variables (table 3) there were significant grade differences on only the number of second rationalizations given for conservation. The grade three adjusted mean was 7.26 compared to 5.28 for grade two. This may be an indication of greater cognitive flexibility in grade three children and also an indication of their greater ability to verbalize their thoughts.

In all the results reported above the grade one subjects were not included because of unavailable covariate scores. In order to provide a more complete picture of the results, table 4 is included. It provides a summary by grade of *t* tests done between the children in the bilingual program and children in the English program on each of the concept formation tests.

TABLE 4

SUMMARY OF *T* TESTS BETWEEN BILINGUAL (B) AND ENGLISH (E) SAMPLES ON ALL CONCEPT VARIABLES BY GRADE

	Number <10	Number >10	Additive Rearrangement	Quantity	Length	Area	Mass	Vol.	Total Number	Total Meas.	Total Cons.
Grade 1											
Mean (E)	1.53	1.59	1.03	1.25	1.09	1.16	0.91	1.09	5.41	4.28	9.69
Mean (B)	1.47	1.75	1.06	1.28	1.19	1.06	1.00	1.34	5.56	4.59	10.16
S.D. (E)	0.84	0.71	0.97	0.88	0.93	0.85	0.89	0.93	2.69	2.93	5.35
S.D. (B)	0.88	0.57	1.01	0.89	0.93	0.91	0.88	0.87	2.53	2.92	5.02
t	0.29	0.97	0.13	0.14	0.40	0.43	0.42	1.11	0.24	-0.43	0.36
Prob.	0.77	0.34	0.90	0.89	0.69	0.67	0.67	0.27	0.81	0.67	0.72
Grade 2											
Mean (E)	1.84	1.81	1.19	1.56	1.53	1.47	1.69	1.63	6.41	6.31	12.72
Mean (B)	1.94	1.97	1.72	1.75	1.75	1.66	1.59	1.81	7.38	6.78	14.16
S.D. (E)	0.51	0.54	1.00	0.72	0.76	0.88	0.59	0.71	2.21	2.29	4.10
S.D. (B)	0.25	0.18	0.68	0.51	0.62	0.70	0.71	0.54	1.24	1.90	2.69
t	0.93	1.57	2.48	1.21	1.26	0.94	0.57	1.20	2.16	0.89	1.66
Prob.	0.36	0.12	0.02	0.23	0.21	0.35	0.57	0.24	0.03	0.38	0.10
Grade 3											
Mean (E)	1.84	1.97	1.59	1.91	1.63	1.53	1.59	1.72	7.31	6.47	13.78
Mean (B)	2.00	2.00	1.94	1.88	1.94	1.81	1.84	1.88	7.81	7.47	15.28
S.D. (E)	--	--	0.71	0.30	0.61	0.80	0.71	0.63	1.09	1.95	2.61
S.D. (B)	--	--	0.25	0.34	0.25	0.59	0.45	0.49	0.40	1.14	1.14
t	--	--	2.58	0.39	2.69	1.60	1.68	1.10	2.44	2.51	2.98
Prob.	--	--	0.01	0.69	0.01	0.12	0.10	0.28	0.02	0.01	0.01

There were no significant differences at grade one, two at grade two, and five at grade three on the conservation test and its subtests. Furthermore the average magnitude of the differences (Bilingual minus English means) increased considerably from grade one (0.13) to grade two (0.40) but very little from grade two to grade three (0.41).

Table 5 contains the same summary for the cognitive functioning variables. The patterns in the data here are not as obvious as for the concept formation variables. The number of second rationalizations given for conservation was

significantly different between the two samples at both grade one and grade three but not at grade two. All the differences that were statistically significant were in favor of the bilingual sample and all but four of the nonsignificant differences were in favor of the bilingual group.

TABLE 5

SUMMARY OF *T* TEST BETWEEN BILINGUAL (B) AND ENGLISH (E) SAMPLES ON COGNITIVE FUNCTIONING VARIABLES BY GRADE

	Op. Ident.	Sub. Ident.	Rev.	Comp.	Seconds
Grade 1					
Mean (E)	11.47	3.16	1.69	0.94	1.09
Mean (B)	9.13	4.13	3.56	2.53	3.03
S.D. (E)	9.77	3.12	2.46	1.74	2.15
S.D. (B)	6.79	5.56	5.70	3.70	4.07
t	1.11	0.86	1.71	2.21	2.38
Probability	0.27	0.39	0.09	0.03	0.02
Grade 2					
Mean (E)	14.63	4.06	2.69	3.25	4.56
Mean (B)	19.56	3.94	4.47	1.84	5.47
S.D. (E)	8.44	4.54	4.71	4.22	4.09
S.D. (B)	8.25	3.93	6.54	2.19	4.71
t	2.37	0.12	1.25	1.67	0.82
Probability	0.02	0.91	0.22	0.10	0.41
Grade 3					
Mean (E)	16.88	6.47	4.13	1.44	5.44
Mean (B)	18.97	6.06	7.03	2.34	9.22
S.D. (E)	8.09	6.32	6.57	2.60	4.37
S.D. (B)	8.10	6.36	7.03	2.97	4.76
t	1.03	0.26	1.71	1.30	3.31
Probability	0.30	0.80	0.09	0.20	0.00

There were some interesting sex differences. Because these differences will form the focus of another article, all that will be reported here is the fact that for each of the seven significant differences due to sex reported in tables 1 and 3, the mean for the boys was significantly higher than the mean for the girls.

Summary

Fluently bilingual children, as is seemingly suggested in previous research, have a number of cognitive advantages over monolingual children, and some of these advantages seem to exist for children in bilingual instructional programs. This study examined the effect of a bilingual instructional program in grades one, two, and three on some cognitive variables. Specifically, the dependent variables were the concept of number, the concept of measurement, the number of second rationalizations given for a conservation response on the concept formation test and the use of reversibility as an argument for conservation.

Using a three way (grade x program x sex) analysis of covariance to control for scores on the Metropolitan Readiness Test, significant main effects due to program were observed on two subtests of the concept formation test and on the use of reversibility. Children in the bilingual classes had significantly higher

adjusted means than the children in the regular English classes on the additive rearrangement subtest of the number concept test and the length subtest of the measurement concept test. The difference in the use of reversibility also favored the children in the bilingual classes.

The number of second rationalizations a child was able to give for conservation was considered to be indicative of cognitive flexibility in that it requires looking at the same phenomena in a different way. There was a significant difference in favor of the bilingual classes on this variable at grade one (t test) and at grade three (program x sex ANCOVA) but not at grade two. This interaction resulted in no significant difference on the three-way ANCOVA.

Discussion

At best this study provides only weak support for the hypothesis that the concepts of number and measurement are more advanced in children who have been in a bilingual class for less than three years. However, the magnitude of the differences tended to increase and favor the bilingual classes as time in the program increased. This is consistent with the findings of Landry (1974) and also with Cummins (1977) "threshold" theory which says that a certain level of fluency needs to be attained before advantages may be observed. The fact that there was some but not very strong evidence for the concepts of number and measurement to be more advanced in primary school children in bilingual classes could be taken as a suggestion that further research is warranted on this aspect.

The results of this study are more convincing with respect to cognitive functioning than they were for concept formation. The number of second rationalizations and the use of reversibility as a rationalization were both at a higher level in children from the bilingual classes. It could be argued that this may have been due to greater verbal ability. While no verbal ability test was given, controlling the readiness scores should have controlled for this to some extent. These results are similar to those of Bain (1975) who found that fully bilingual children had greater cognitive flexibility than monolingual children.

The fact that all the significant differences observed in the adjusted means were in favor of the bilingual classes provides further justification to school boards for offering such programs.

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The Relationship Between Arithmetic and Reading Achievement and Visual Pattern Recognition in First Grade Children

The purpose of this study was to determine if identical and reverse pattern recognition skills were related to tested reading and arithmetic achievement in 20 first grade children who attended a remedial reading class. Results indicated that (1) same pattern recognition was significantly higher than reverse pattern recognition, (2) identical pattern recognition did not affect performance on reading or arithmetic achievement, (3) reverse pattern recognition significantly affected performance on reading and arithmetic achievement. Language of test instructions is discussed as means of accounting for identical pattern recognition serving as a suppressor variable in reading achievement but not in arithmetic achievement.

A certain amount of constancy is required by all systems; however in this world there is little consistency, and variation becomes the rule (Anderson, 1975). In order to survive, the ability to adapt becomes a necessity. Adaptation can be seen as the changing of the environment (assimilation) or the changing of oneself (accommodation) (Piaget & Inhelder, 1956). Since variation and differences are common, growth occurs from both finding similarities among the differences and finding differences among the similarities (Gagné, 1974). This skill can be seen as a basic element of information processing (Anderson, 1975; Bower, 1975; Flavell, 1963; Piaget & Inhelder, 1956).

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Rules are developed to determine what things are the same and what things are different. These rules are the foundation of set theory and, specifically, pattern recognition (Lovell, 1971; Piaget & Inhelder, 1956). With new experiences the rules need to be redefined. This ability to change the rules is necessary for the acquisition of higher levels of learning and understanding (Bloom, 1956; Gagné, 1974).

One prerequisite seen for true pattern recognition is the ability to perform one-to-one correspondence or identical pattern recognition (Sternberg, 1975). From this stage, then, true pattern recognition develops with the ability to reverse patterns (Sternberg & Larson, 1976). Piaget (1972) sees the ability to reverse patterns as a critical stage for the development of mathematics and language. Pattern recognition tasks have often been used on intelligence tests (Leiter, 1959; Raven, 1956; Thurstone, 1938; Weschler, 1972). Additionally, pattern recognition skills have been related to the teaching of specific learning strategies. Based on the work of Zeaman and House (1963) and Piaget (1972), Project MATH (Cawley, Goodstein, Fitzmaurice, Lepore, Sedlak & Althaus, 1975) and the Pattern Recognition Skills Inventory (PRSI) (Sternberg, 1974) rely heavily upon the use of pattern recognition skills for the assessment of readiness in mathematics and for the development of mathematics teaching strategies. Similarly, Johnson and Myklebust (1967) and Jones (1968) have used the basic elements of pattern recognition for the assessment of reading readiness and for the development of reading skills. Since these strategies have been successful with mentally retarded and learning disabled children in these programs, it would seem plausible that pattern recognition is one of the critical elements for achievement in reading and arithmetic.

The purpose of this investigation was to determine if identical and reverse pattern recognition skills were related to tested reading and arithmetic achievement in first grade children who attended a remedial reading class.

From the above discussion, three null hypotheses were postulated:

1. For all children, there is no difference in performance in pattern recognition between identical pattern and reverse pattern.

2. Arithmetic achievement of the child is not affected by age of child, identical pattern recognition and reverse pattern recognition.

3. Reading achievement of the child is not affected by age of child, identical pattern recognition and reverse pattern recognition.

Method

Subjects

Twenty subjects between the ages of 6 years, 4 months and 8 years, 4 months (mean age of 6 years, 11 months) were selected from an elementary school in suburban Maryland. All subjects were members of a first grade remedial reading class. Students were in this class because their regular classroom teacher believed they were not progressing as rapidly as they should during the first half of the school year. Students attended this class for two hours per week.

Instrumentation

The instrument used in this study was the same as that used in Bragman and Hardy (1979). It consisted of 20 cards, 14 by 22 inches (35.56 cm by 55.88 cm),

4-ply, white poster board, bearing one model sequence pattern and four choice sequence patterns. Each pattern was made up of 1-inch (2.54 cm) squares of coloured paper as the dimension. On the left side of each card the model pattern sequence was given, represented by the coloured squares. Four patterns were used (ABAB, ABCABC, ABBABB, AABAAB). On the right side of the card, four choice pattern sequences were presented. On each card, one of the four choice pattern sequences was the same as the model pattern sequence, one was the reverse of the model pattern sequence, and the other two were randomly selected patterns that included only those colours given in the model sequence. All choice sequences were randomly placed on the card. Cards were randomly ordered. A sample task is presented in Figure 1.

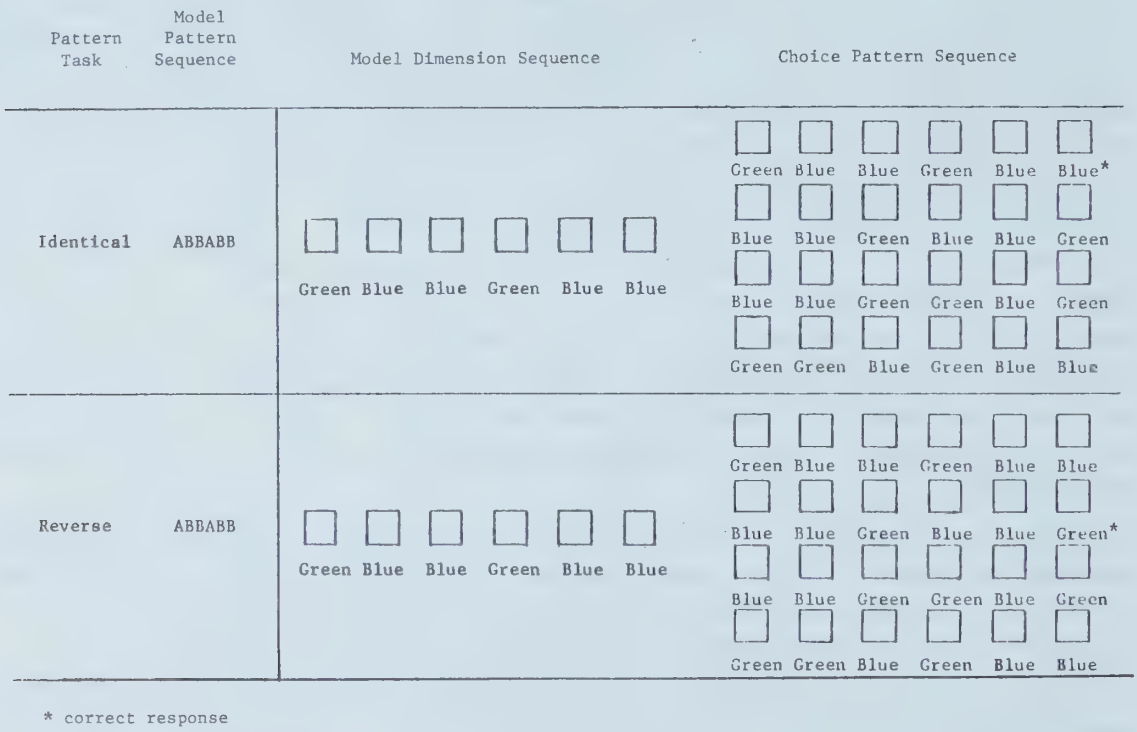
Pattern Task
Model Pattern Sequence
Model Dimension Sequence
Choice Pattern Sequence
Identical
ABBABB
Green Blue Blue Green Blue Blue
Green Blue Blue Green Blue Blue*
Blue Blue Green Blue Blue Green
Blue Blue Green Green Blue Green
Green Green Blue Green Blue Blue
Reverse
ABBABB
Green Blue Blue Green Blue Blue
Green Blue Blue Green Blue Blue
Blue Blue Green Blue Blue Green*
Blue Blue Green Green Blue Green
Green Green Blue Green Blue Blue
* correct response

Figure 1. Pattern recognition task.

Treatment

Each subject was first given the Ishihara Color Blind Test (Ishihara, 1970). No subjects were colour blind. Each subject was then given three practice trials on the pattern recognition tasks. A female examiner was present at all times and gave the following directions:

> Look at these colours (pointing at the model sequence patterns), now look at these colours (pointing, one at a time, at choice sequence patterns). Point to the one that is the same (or reverse of, depending on the tasks) as this one (pointing to the model sequence patterns).

If a subject failed to point to a pattern in the choice sequence patterns, the directions were repeated and the correct answer was shown. If, after three repetitions of directions, the subject still failed to point, the subject was eliminated from the study and another subject was selected from the subject pool. Despite this provision, no subjects were replaced.

Between each treatment there was a five-minute break, and three new practice trials were given before the second treatment was administered. Testing took 30 minutes per subject.

All subjects received two pattern recognition tasks: identical pattern match and reverse pattern match. Subjects were randomly assigned to a balanced order of tasks. In addition, within the following two weeks of the pattern recognition tasks all subjects were given the Metropolitan Achievement Test, Primary 1, reading and arithmetic subtests (Durost, Bixler, Wrightstone, Prescott & Balow, 1971). All testing was done near the end of the remedial program.

Results

Hypothesis 1

The means and standard deviations for the identical pattern recognition task were 18.90 and 1.59 respectively, and for the reverse pattern recognition task, 8.40 and 7.58 respectively. The higher the score the better the performance, with the highest possible score being 20. To test the difference between these means a repeated measure design was run. Table 1 presents a summary of this analysis.

TABLE 1

REPEATED MEASURES OF IDENTICAL AND REVERSE PATTERN RECOGNITION

Source	SS	df	MS	F[a]
Task	1102.50	1	1102.50	34.88*
Subjects	538.10	19	28.32	
Interaction	600.50	19	31.61	
Total	2241.10			

[a] F of 4.35 needed for significance beyond the .05 level.

* Significant, $p<.05$

The results indicate that performance on the identical pattern recognition task was significantly higher than performance on the reverse pattern recognition task (F (1,19) = 34.88, $p<.05$). Thus the first null hypothesis that there is no difference for all children in performance between identical and reverse pattern recognition was rejected.

Hypothesis 2

The grade equivalent scores on the Metropolitan Achievement Test, Primary 1, Arithmetic subtest were between 1.2-2.2 with a mean and standard deviation of 1.80 and .33 respectively. First order correlations were determined and are presented in Table 2. Hypothesis 2 was tested by using a forced order multiple regression analysis. Two orders of analysis were performed. The first order was: age, identical pattern recognition, reverse pattern recognition, and all interactions. The second order was: age, reverse pattern recognition identical pattern recognition, and all interactions. The multiple R for effects of age, identical pattern recognition, and reverse pattern recognition on arithmetic achievement was .8312 with R^2 of .6909. These results are presented in Table 2.

TABLE 2

CORRELATION MATRIX

	Identical	Reverse	Reading	Arithmetic
Age	.3637	.1824	.2832	.3000
Identical		-.1366	.1559	-.0416
Reverse			.5710	.5194
Reading				.3242

TABLE 3

ANALYSIS OF EFFECTS OF AGE OF CHILD, IDENTICAL PATTERN RECOGNITION AND REVERSE PATTERN RECOGNITION ON ARITHMETIC ACHIEVEMENT AND READING ACHIEVEMENT

Order of Entry Source	Arithmetic Achievement *F**	Reading Achievement *F**
Age (a)	3.50	1.82
Identical Recognition (I)	1.01	.07
Reverse Recognition (R)	7.22**	6.99**
I × R	.40	.35
A × I	2.69	.06
A × R	2.20	.97
A × I × R	9.22**	.47
Age (a)	3.50	1.82
Reverse Recognition (R)	8.67**	6.34**
Identical Recognition (I)	.13	.72
I × R	.40	.35
A × R	4.31	.58
A × I	.58	.45
A × I × R	9.22**	.47

* *F* of 4.75 needed for significance beyond the .05 level.
** Significant, $p < .05$

An examination of these results indicates that arithmetic achievement is affected by reverse pattern recognition but not by age of child or identical pattern recognition. In addition, the three-way interaction of age of child, identical pattern recognition, and reverse pattern recognition was found to be significant. Thus, the second hypothesis that arithmetic achievement of the child is not affected by age of child, identical pattern recognition, and reverse pattern recognition cannot be completely rejected.

Hypothesis 3

The grade equivalent scores on the Metropolitan Achievement Test, Primary 1, Reading subtests were between 1.4-2.2 with a mean and standard deviation of 1.69 and .23 respectively. The first order correlations were determined and are

presented in Table 2. Hypothesis 3 was tested by using a forced order multiple regression analysis. Two orders of analysis were performed. The first order was: age, identical pattern recognition, reverse pattern recognition, and all interactions. The second order was: age, reverse pattern recognition, identical pattern recognition, and all interactions. The multiple R for effects of age, identical pattern recognition, and reverse pattern recognition on reading achievement was .6872 with a multiple R^2 of .4722. These results are presented in Table 3.

An examination of these results indicates that reading achievement is affected by reverse pattern recognition but not by age of child or identical pattern recognition. Thus, the third hypothesis that reading achievement of the child is not affected by age of child, identical pattern recognition, and reverse pattern recognition cannot be completely rejected.

Discussion

Since all children performed better on same pattern recognition than reverse pattern recognition, the first null hypothesis was rejected. This supports the position that there is a hierarchy in pattern recognition skills with identical pattern recognition developing before reverse pattern recognition. The results for the next two hypotheses are support for the position that pattern recognition is indeed related to arithmetic and reading achievement. These findings, however, are an indication that one-to-one correspondence or identical pattern recognition is not the critical element but, rather, that the ability to do true or reverse pattern recognition is the key element. This gives support to both Bloom's (1956) and Gagné's (1974) theories that only once rules can be redefined can higher levels of learning and understanding be acquired.

It is necessary to note that with reading achievement there was a significant interaction among age, identical pattern recognition, and reverse pattern recognition. A possible reason for this is that identical pattern recognition is serving as a suppressor variable. If one notes the first order correlations given in Table 2 one can observe that the correlation between identical and reverse pattern recognition is negative. However, in the multiple regression analysis when identical pattern recognition is forced into the analysis before reverse pattern recognition, the effect of reverse pattern recognition is greater than when reverse pattern recognition is entered before identical pattern recognition. This leads one to suspect that identical pattern recognition may be serving as a suppressor variable and some other properties related to pattern recognition may be operating. One possible related variable might be the effect of language in the instructions.

Bragman (1980) noted that with deaf children the language used in the instructions for pattern recognition tasks affected performance. It may then be that in this study, also, the language of the instructions is a critical variable with first grade children. Perhaps those children who did better on the pattern recognition tasks and the reading achievement test did so because of a higher level of understanding of the test instructions. This may not have been as critical a factor with the arithmetic test since the instructions had only a limited verbal component, thus accounting for the fact that the suppressor variable was only operating in the relationship between pattern recognition and reading achievement.

Further research is necessary to determine if, in fact, language of instruction has affected these data. In any event, pattern recognition seems to be a key

element in reading and arithmetic achievement and warrants further attention in the research literature.

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Distance Education: Simultaneous One-Way Television and Group Telephone Conferencing for Satellite Map Instruction

In this project, a group of teachers instructed about Landsat satellite maps by one-way television and simultaneous telephone group conferencing were compared to another group instructed face to face. The pupils taught by both groups of teachers were then examined to determine their ability to interpret Landsat maps. Results indicate that the television group telephone procedure is a viable mode of instruction.

In a previous project, the authors determined that group telephone conferencing was a usable instruction procedure (Kirman & Goldberg, 1979). However, it was noted that much dissatisfaction was expressed by those using that procedure, especially with the impersonalness of group telephone conferencing. In order to eliminate this element, the authors hypothesized that the addition of one-way television in which the participants could see their instructor would be of some value. In addition, if the participants could interact with a small group rather than on an individual basis, the impersonalness of the situation could further be diminished.

Another feature of the previous project that caused dissatisfaction was the discomfort of having to hold a telephone to one's ear for a prolonged period of time. To overcome this and, possibly, to enhance the group atmosphere, "speaker" telephones were used, enabling participants to hear and speak with the instructor without having to hold a telephone receiver.

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The advantages of pursuing this new mode of instruction are: to offer convenient distance education courses to students without the need to "export" an instructor; to provide a delivery system that could reach students in distant areas that ordinarily might not merit staffing; to teach students scattered over an area too vast to provide a central location for face to face instruction; to provide expert guidance to teachers and other professionals beyond commuting distances of universities and other centers; and to increase the numbers of people served by education facilities in a period of declining enrolments.

The procedures utilized in this project can be used over both land lines using cable or microwave television and long distance telephones, or with communications satellites such as the Anik B that have television-telephone capabilities.

A review of the literature failed to produce any information of other projects using one-way television with simultaneous group telephone conferencing.

Procedure

The Landsat satellite images were used for instruction because they are a new classroom tool with which teachers and pupils have little or no familiarity at this time and, thus, the teachers would be more dependent upon the instructor for information about these images. Previous research has shown that children as young as those on grade three level are capable of using infrared false color Landsat satellite images (Kirman, 1977).

Thirty teachers of grades 4, 5, and 6 children in both Edmonton and Sherwood Park, Alberta, volunteered for this project and were divided into two groups, 15 in Edmonton, and 15 in Sherwood Park. The Sherwood Park subjects (television-telephone group) were the teachers of 86 grade four, 157 grade five, and 122 grade six pupils. The Edmonton group (face to face) were the teachers of 69 grade four, 121 grade five, and 163 grade six pupils. Both groups of teachers received five hours of instruction about Landsat satellite maps over a two-week period. During the first week, they received two 2-hour sessions on different days and during the second week, a 1-hour session, with a representative of the Alberta Remote Sensing Center participating to answer technical questions. During the second week they also began to teach their pupils about Landsat satellite maps for approximately three weeks. The pupils did not receive television-telephone instruction.

The Edmonton teachers received their Landsat map instruction face to face in one center. The Sherwood Park teachers received their instruction via one-way cable colour television and group telephone conferencing in three different centers. Speaker telephones were installed in each Sherwood Park center. Both groups had the same instructor and materials. Materials consisted of an instructional manual with class sets of infrared false colour Landsat images, magnifying glasses, protective acetate covers for the images, china markers for writing on the acetates, and rulers.

In order to eliminate talking into a void, one teacher in each of the three Sherwood Park Centers was designated as a group leader. The group leader would be asked by the instructor if there were any questions, or would be directed to query others in that center about areas of concern. The group leader was also responsible for checking the equipment and area prior to the sessions.

The instructor also made use of a prerecorded tape during one session. This allowed her to move in a step by step instruction procedure, stop the tape with

the image on hold, and ask questions about it. She could also stop the tape, go on camera and discuss some of the items on the tape with the teachers, and then return to it. The teachers also had the opportunity to cross-question or clarify points with the others.

Prior to beginning their classroom Landsat instruction, teachers were required to survey their pupils for any knowledge of Landsat imagery. No pupil was reported to have had any ability to interpret these images. When the teachers concluded their pupil Landsat instruction, the inservice instructor personally administered an objective achievement test to the children. At that time the teachers received a questionnaire designed to enable them to rate their inservice training. It was filled out at their convenience and mailed in. The pupil Landsat achievement test results and teacher responses to the rating questionnaire were the indices used to assess the effectiveness of the television-telephone mode of delivery.

Results

Teacher Data

Table 1 shows that the control group teachers were significantly older (39.8 vs. 31.5 yrs.), had significantly more years of teaching experience (15.6 vs. 7.9 yrs.), and had significantly more years of teaching experience in their present grade (6.7 vs. 2.6) than the television-telephone instructed teachers. No significant differences were noted between the two groups in the amount of time spent studying Landsat imagery or the amount of time spent teaching Landsat imagery to pupils.

TABLE 1

COMPARATIVE DATA ON TELEVISION-TELEPHONE INSTRUCTED AND CONTROL GROUP ($N=30$)

	$\bar{X}$ Age	$\bar{X}$ Years of Teaching Experience	$\bar{X}$ Years Teaching Present Grade	$\bar{X}$ Estimate of Time Studying Landsat (Minutes)	$\bar{X}$ Estimate of Time Teaching Landsat (Minutes)
Television-Telephone Group	31.5	7.9	2.6	222.9	327.5
S.D. S.D.	(7.86)	(7.6)	(1.6)	(174)	(238)
Face to Face Group	39.8	15.6	6.7	388	304.2
S.D.	(7.03)	(7.1)	(4.4)	(188)	(118)
T	3.03	2.9	3.3	1.7	.32
p (two-tailed)	<.005	<.007	<.002	<.09	<.74

Although the two groups of teachers differ in teaching experience, one would not expect this difference to affect the results of the study because of the

considerable amount of experience ($\bar{X}$ of 7.9 yrs.) of even the less experienced television-telephone group. If the difference in teaching experience had had an effect it would presumably have conferred an advantage on the control group, making this a more severe test of the effectiveness of the television-telephone mode of delivery.

Teacher Evaluation of Inservice Delivery System

Anonymous evaluations of the delivery systems were obtained from all 30 teachers after they had completed both their inservice and their teaching of Landsat maps to their pupils. An evaluation form similar to that used in Kirman and Goldberg (1979) was employed in order to permit comparison of evaluative data from the two studies.

Most important for the potential use of the delivery systems is teacher response to the following:

> If you were involved in further training in Landsat, would you find your present system:
> 1. Acceptable — Yes, No.
> 2. Desirable — Yes, No.

The results show that 11 out of 15 of the television-telephone group responded yes to acceptability as compared to 15 out of 15 of the control group, the difference being nonsignificant (chi-square = 2.59; $p<.10$).

To item 2 on desirability, 15 out of 15 of the control group responded yes once again, as compared to only 8 out of 15 of the television-telephone group, the difference being significant (chi-square = 6.71, $p<.01$).

The above data suggest that while the television-telephone mode is acceptable as a means for inservice delivery and is rated as being desirable by a majority, it is viewed as being an undesirable mode by a substantial minority of teachers.

Comparison of the present data with comparable data from Kirman and Goldberg (1979), where only 22% of subjects found the telephone mode of delivery acceptable as compared to a 73% acceptability rating here, suggests that the addition of television and speaker telephones did improve the delivery mode as predicted. The lower rating on desirability indicates that further analysis and, possibly, some improvement on the present delivery mode is necessary.

Other data from the evaluation questionnaire show that the television-telephone mode received significantly better ratings on physical comfort and convenience than the face to face mode. The two modes were found not to differ significantly on the capability to impart basic instruction and new ideas about Landsat teaching. The face to face mode was rated significantly better on the following dimensions: creating the opportunity to raise questions and to learn from other students, making it possible to obtain feedback, and permitting interaction with other students and the instructor. These results suggest that while the television-telephone mode as used here was adequate for instruction purposes, it is less adequate than the face to face mode for enabling the interactive aspects of instruction to take place. Perhaps the satisfactory rating on acceptability reflects the first aspect, the lower ratings on desirability reflect the second.

The last questionnaire item was: "Given a choice between the two modes of instruction, which would you choose?" All 15 of the face to face group indicated they would choose face to face instruction. Of 13 of the television-telephone group who responded to this question, 5 (39%), indicated they would choose television-telephone instruction. Although the face to face group was not exposed to the experimental method they were queried to gain some idea of how potential users of the distance mode might react given their choice of the two methods of instruction. The data suggest that their lack of familiarity with the distance mode may have influenced their rejection of it.

In Kirman and Goldberg's previous research (1979) only 11% of subjects (telephone alone) indicated that they would prefer the distance mode of instruction to face to face instruction compared to the above 39%. This is an indication that the changes introduced in the distance mode in this project appear to have had a positive influence. However, it appears that those not using the distance mode of instruction in this project would not opt for it over face to face instructions.

Children's Achievement Test

The children's achievement test consisted of 13 multiple choice questions and an infrared false color image divided into grids. The children were required to answer questions about the image in particular (e.g., find a city, find a river, etc.) and Landsat satellite images in general (e.g., How was this image made?, etc.). The achievement results of the grades 4, 5, and 6 pupils were combined since statistical analysis of the between-grade differences were found to be nonsignificant.

Table 2 shows that, although the scores were quite close, the pupils taught by teachers introduced to Landsat maps via the television-telephone mode of delivery scored significantly better on the map achievement test than those pupils taught by the control group of teachers ($\bar{X}$ = 9.89 vs. 9.58, $p<.04$). The pupils of the control teachers are considered to have performed well in view of their being correct on 74% of the test questions on the average. The inservice of the control teachers was clearly sufficient for the purpose of transmitting new knowledge and skills to them.

TABLE 2

COMPARISON OF PUPILS' ACHIEVEMENT ON THE THIRTEEN ITEM LANDSAT ACHIEVEMENT TEST (N=718 PUPILS)

	Pupils of Television-Telephone Subjects (N=365)	Pupils of Face to Face Subjects (N=353)
$\bar{X}$	9.89	9.58
S.D.	2.04	2.13

t = 2.01, d.f. = 716
p < .04 (two-tailed test)

The significantly better performance of pupils of the television-telephone group (average = 76%) cannot be attributed to the delivery mode because of the uncontrolled variables in this study. The least that can be concluded is that the television-telephone mode of delivery is sufficient for imparting new knowledge

and skills. It is interesting to note also the near significant Landsat achievement difference favouring a telephone group over a face to face instructed group of student teachers previously reported by Kirman and Goldberg (1979).

Conclusions

From the above data, it appears that a television-telephone group mode of delivery for a teacher inservice training course is at least as effective as a face to face mode of delivery for communicating information to be eventually taught to pupils. In addition, the scores of the children on their achievement test appear to support Kirman's (1977) previous research indicating that elementary school children are able to work with Landsat infrared false color imagery.

Some of the teachers in the television-telephone group expressed a preference for face to face instruction. This may have been due to feelings of resistance to technology and the lack of familiarity with this mode of instruction. It is hypothesized that when the technology for television-group telephone conferencing becomes more available and thus more familiar, for instruction purposes, such differences in perceived desirability of the method will be greatly reduced. However, from the data, it appears that if no other means of instruction were available, the television-telephone group procedure would probably be acceptable.

In a previous project involving only telephones, Kirman and Goldberg (1979) found that impersonalness of the procedure was a concern to many of the participants. In this project it appears not to have been a major factor. This maybe due to both the television use and the placement of students in groups to participate. Impersonalness may still be a factor where the student is not in a group. In addition, personal habits and attitudes toward television watching as well as the personality of the television instructor may also play a part in responses to this mode of delivery.

Implications for Further Research

Consideration should be given to the habits and attitudes toward television watching for influence on student abilities and performance with this mode of instruction. As well, the personality of the instructor might be considered as a possible influencing factor. Investigation should also be made into what differences, if any, exist between children who view television extensively and those who do not. This would relate to the element of familiarity which might have a bearing on attitudes towards television-group telephone conferences.

Types of instructional materials that best lend themselves to this mode of instruction require greater examination. Further research might be conducted to determine if students instructed only by television lecture perform as well as those using the television-group telephone conferences procedure. Additionally the use of this mode of instruction might be explored with students participating individually, rather than as part of a group. Finally, the use of this instruction procedure with children should be examined.

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Some Correlates of TV Viewing

To evaluate the relationship between extent of television viewing and other variables, especially measures of educational attainment, a set of appropriate tests was administered to a sample of elementary school students in Edmonton (E78). Two independent factors emerged from a factor analysis of the matrices of correlations: ability-attainment variables and TV viewing variables. This finding was corroborated from a similar analysis of data collected two years previously from the same city (E77). A minor but widely-reported finding was that youngsters with parents in the higher SES categories, characterized by a heavy use of symbolic skills, watched significantly less TV than their SES counterparts. The programmes most preferred were listed and it was concluded that most people watch television programmes to drive away boredom, kill time cheaply, or entertain themselves lightly.

The author of the present study of television viewing in Edmonton had two purposes in mind. First, an attempt was made to replicate previous findings in Edmonton in 1977 (Anderson & Maguire, 1978) to the effect that youngsters in the later grades of the elementary school watch any kind of programme — kidvid, serious programmes (news, documentaries), violent shows, and situation comedies—and that this had no significant negative relationship to their educational performance. Second, Anderson and Maguire failed to explore fully lines of enquiry such as the relationship commonly reported (Comstock, Katzman, McCombs & Roberts, 1978, p. 98) between socioeducational status and TV viewing, and the examination of programme preferences. Moreover, since information about some of these variables has lately come to hand, a further study was required to pick up the loose ends.

A discussion of word usage and a correlated conceptual distinction is worth introducing at this point. Two sorts of laws are conventionally accepted in psychological and educational research. A search for causal laws reflects the attempt by investigators to study behaviour as natural scientists so successfully studied the material universe (Anderson, 1981). Probabilistic laws, on the other

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hand, have never achieved the eclat of their classical counterparts, although modern physics has given them a new lease of life (Oppenheimer, 1956). Moreover, a claim is often made for the discovery of a causal law, usually described as an "effect," when it has been established by some Fisherian treatment of correlational data. For example, Hornik (1978) speaks of the "negative effects" on cognitive growth of TV viewing although he has only transformed massively correlations between the two variables by a pseudo-experimental analysis.

Further, as Meehl (1978) has shown, a research may try to confirm (or falsify) an hypothesis, especially in "soft psychology" (personality, social psychology, counselling, person perception) but there are always untested auxiliary hypotheses which may be responsible for the results. For example, Milgram (1974) in a famous research series, thought he had discovered "obedience to authority" (effect and cause). What he showed, however, was a relationship between different sorts of instructions (and experimental arrangements) and different degrees of obedience.

Accordingly, the position taken in the present study is that, while the causal formulations of experimenters and of quasi-experimenters like Corteen (1977) will be accepted as such, nevertheless it is equally legitimate conceptually to deal with probabilistic laws on the basis of which a nest of causal inferences may be hypothesized for practical or theoretical purposes.

The assumption behind the 1977 study (E77) was that extensive TV viewing had a deleterious effect on educational attainment, particularly of a linguistic sort. This concern has been expressed by Gerbner and Gross (1976a) in a larger context.

> Television is different from all other media. From cradle to grave it penetrates nearly every home in the land. Unlike newspapers and magazines, television does not require literacy. Unlike the movies, it runs continuously, and once purchased, costs almost nothing. Unlike radio, it can show as well as tell. Unlike the theatre or movies, it does not require leaving your home. With virtually unlimited access, television both precedes literacy and, increasingly, preempts it. (p. 42)

According to this argument, the continuous watching of pictures has eroded in some way the symbolic (verbal and nonverbal) construction of reality which has a material substrate (Blakemore, 1977, pp. 159-160). The possibility that symbolic capacity — and here a metaphor must be used because the mechanism of the process is unknown — is being undermined by constant exposure to a graphic medium, has been described recently by Steiner (1978).

> It is now commonplace that audiovisual means of communication are taking over wide areas of information, persuasion, entertainment, which were formerly the domain of print. At a time of global increase in semi- or rudimentary-literacy . . . it is very probable that audiovisual 'cultural packages' . . . in the guise of cassettes will play a crucial role. It is already . . . fair to say that a major portion of print . . . is, at least in the broad sense of the term, a caption. It accompanies, it surrounds, it draws attention to material which is essentially pictorial. (pp. 198-199)

Although Steiner's position is popular (Lasch, 1980, p. 224), nevertheless it is not generally supported by recent empirical investigations using different methodologies (Corteen, 1977; Harrison & Williams, 1977; Hornik, 1978). At best, occasional findings about negative relationship between TV viewing and sorts of educational performance are regarded as "suggestive" (Corteen, 1977, p. 11), and Hornik's (1978, p. 12) "negative effects," upon which he lays great store, are derived from an investigation which is statistically flawed because of his massive use of analysis of covariance (Maguire & Hague, 1976) to discard data disclosing a

positive relationship between the possession of a TV set and educational attainment. Moreover, Hornik, using information from a study of the effects of educational television in El Salvador, does not report social (class) variables which, rather than the mere existence of television might have been responsible for his "negative effects" (p. 2). A further investigation of Steiner's position is in order.

Method

No attempt was made to exercise the control, experimental or sampling, so characteristic of the natural science (Petronovich, 1979) because this approach has proved to be useless in soft psychology (Anderson, 198l). Moreover, if an hypothesis is sufficiently robust, it should prevail in uncontrolled conditions such as the use of general (available) samples of students and different, although formally similar, tests. Indeed, investigations of this sort in two Canadian provinces showed remarkably similar findings (Anderson, 1979).

Sample

An Edmonton sample (E78) consisted of 275 subjects (140 females) in grades 5 and 6 from an equal number of schools in each of three neighbourhoods, relatively wealthy, relatively poor, and "middling," as judged by the research officer of the Edmonton Public School Board. It was rapidly discovered that the two schools in the first sort of neighbourhood were large and, having many classes per grade level, contributed almost half of the subjects in the sample. Since such a sample consists of a disproportionately large number of students whose fathers work in upper-echelon service jobs, the effect of socioeconomic status on the other variables may be very significant. Children who could not read English adequately (recent immigrants or youngsters with learning disabilities) were not tested unless this was of some convenience to the principal. In the latter case their report sheets and tests were discarded, as were those of all students in homes without cable TV.

Data pertaining to TV preferences were taken from Vancouver samples described in Anderson (1979).

Measures

Apart from sex differences (coded as female = 1, male = 2), the following sorts of tests were administered to members of the E78 youngsters. (a) Ability estimates — VIQ (verbal IQ) and NVIQ (Nonverbal IQ) — were derived from the Canadian Test of Cognitive Abilities. (b) Measures of word meaning (coded as "Vocab") and reading comprehension (coded as "Read") were taken from sections of the Stanford Achievement Test. (c) A locally standardized test of achievement in mathematics (Math) was considered a marker for nonverbal attainment. (d) A TV questionnaire was given in which subjects were asked to place marks opposite programmes they regularly watched and were encouraged to write in favoured programmes not included in the list. For every child, scores were derived for each of the programmes by tallying the marks, and the total score for each subject consisted of all the marks made. Ninety-seven programmes had to be rated, all of which were still to be seen. Most were retained from the E77 investigation, while the rest were suggested by youngsters not participating in the present study. The questionnaire differed from the earlier one in two ways: (a) since Kidvid items were all highly correlated, they were replaced by two items, Saturday Morning

Cartoons and the Muppet Show, and (b) a new residual category of "Other" items consisting of Nancy Drew/Hardy Boys and Grizzly Adams, about the placement of which in other categories the raters (three graduate students) could not agree. The new 1978 questionnaire consisted of 59 situation comedies (Sitcom), 19 violent shows (Viol), 11 serious or mature programmes (Mat), two cartoon items (Kidvid) and the 6 unclassifiable items (Other).

It is worth noting that the kidvid cartoons may have been American or Canadian, the latter being pruned of violent incidents.[1] The members of the E77 sample preferred to watch American programmes, but these were the only ones listed in the Anderson & Maguire study. Further attention is warranted to Canadian youngsters' preferences for either sort of cartoons and to any change in the associated pattern of correlates.

(e) The variable of socioeducational status (SES) for each subject, formerly arrived at by placing the occupational status of the father or that of the mother if hers were higher, on a six-point scale defined in terms of formal education received by the parent (Anderson & Maguire, 1978, p. 158), was slightly altered so that this SES hierarchy, taken largely from British categories (Roberts, Cook, Clark & Semeonoff, 1977, p. 76) could more appropriately fit the Canadian scene. What was wanted was agreement about the categorizing of certain jobs and occupations in terms of the extent to which they required a knowledge of symbolic skills, and their placement in a hierarchy between the professional and the managerial (at the top of the hierarchy) and the rough skills learned "on the job" (at the bottom). Information about the five SES categories is listed below.

1. Parents with university degrees (teachers, physicians, engineers, lawyers) and those with equivalent professional qualifications (chartered accountants, professional engineers).
2. Parents with some post high-school education which required some symbolic training (civil servants, specialized secretaries, teacher or counsellor aides, nurses).
3. Parents with some post high-school education of a largely manual sort (draftsmen, mechanics, welders, electricians).
4. Parents who might or might not have finished high school, doing manual work learned on the job (carpenters, policemen, fishermen, construction workers, bus or truck drivers, bartenders, salepersons).
5. Parents doing rough manual work (garbage collectors, furniture movers, postal workers, meter readers, dishwashers, waiters and waitresses, labourers, workers at a car wash, short-order cooks, general handymen).

Any awkward problems in classification were cleared up with the help of counsellors, teachers, and principals.

Results

Descriptive Statistics

Information about the youngsters' performance on all variables by the E78 and E77 samples is listed in Table 1. The significant difference in VIQ in favour of E77 is difficult to understand. Both general samples were selected according to the same criterion, although the tests were not administered in the same schools. The number of situation comedies and violent programmes has increased by more than

300 percent and 70 percent, respectively, and the correlative TV watching has increased from 46 percent to 74 percent and from 22 percent to 77 percent, respectively, while viewing the same number of mature programmes has declined slightly. The kidvid cartoons, reduced greatly in number, still held their viewing audience almost as strongly as in the previous study (Anderson & Maguire, 1978, p. 160). Total TV viewing has declined significantly from almost 60 percent to 43 percent, a sign that the medium's hold, measured in terms of the frequency with which the number of programmes is watched, is not so strong as it was in 1977 when the Anderson and Maguire study was conducted.

TABLE 1

DESCRIPTIVE DATA FROM E78 AND E77 SAMPLES

	E78			E77			
	M	SD	Total[a]	M	SD	Total[a]	t
SES	3.4	2.8	5	4.2	1.3	6	
VIQ	104.7	14.7		113.0	14.5		4.4
NVIQ	110.7	15.7		114.6	13.8		1.4
Vocab	50.6	27.8		51.3	24.9		.12
Read	53.2	26.9		50.1	24.3		.56
Math	58.0	27.1		54.0	25.8		.82
Sitcom	27.2	11.3	59	13.7	4.5	19	
Viol	8.5	4.4	19	8.9	3.2	14	
Mat	5.7	1.9	11	2.9	23	11	
Other	2.6	1.5	6				
Kidvid	1.6	.5	2	6.8	3.2	8	

[a]Refers to total number of categories (SES), or TV programmes, listed.

Total TV Watching as a Dependent Variable

The most economical measure of TV watching is the total TV score based on the presence of significant and positive correlations among all TV categories. These correlations, run for the E78 sample, are presented in Table 2. Because almost all the correlations are significant and high, except for those involving kidvid with its low variance, total TV watching can be regarded as a general measure in the following analysis.

TABLE 2

CORRELATIONS AMONG TV CATEGORIES (E78)

Category	Sitcom	Viol	Mat	Other	Kidvid	Total
Sitcom	---	.588	.466	.652	.311	.955
Viol		---	.455	.544	.257	.775
Mat			---	.455	.233	.600
Other				---	.242	.737
Kidvid					---	.367
Total						---

Correlations <.12 are significantly different from zero.

Socioeducational Status and TV Watching

The number of subjects in each SES group and the extent of their TV watching are listed in Table 3. These groups are significantly different in terms of TV watching ($F = 7.91$, $df = 4,270$ and p less than .001). As Comstock et al. (1978) report, "Education of head of household — makes a great difference. Viewing was more than six hours [per week] greater in the fall of 1976 when parental eucation was less than four years of college" (p. 95).

TABLE 3

DISTRIBUTION OF SUBJECTS AND MEAN VIEWING IN SES CATEGORIES (E78)

SES Groups	N	Mean TV	SD
5	78	35.88	17.83
4	60	38.98	16.87
3	56	41.96	14.02
2	50	44.81	18.18
1	31	48.46	19.45

An illustration of this SES effect is best given from E78 data in which discrimination in TV viewing by SES groups was at its greatest. The list of programmes affected by SES was arrived at by counting the number of subjects at each SES level who watched or did not watch each show, and by estimating the extent to which these values departed from chance. An example of significant discrimination by SES level is "Police Woman," a violent show laced with sex.(see Table 4). This table can be clarified by transforming these numbers into percentages by column. Programmes showing this sort of significant relationship are of a popular sort including The Jeffersons, Starsky and Hutch, Laverne and Shirley, The Bionic Woman, Wonder Woman, Chips, Little House on the Prairie, Baretta, and The Waltons. Some of these are still to be seen with new themes or as "reruns."

TABLE 4

POLICE WOMAN: ITEM PREFERENCES BY SES

SES	Not Watching	Watching	Total
5	66	12	78
4	51	9	60
3	46	10	56
2	32	18	50
1	19	12	31
Total	210	65	275

$\chi^2=29.337$, $p=.000007$

TABLE 5

POLICE WOMAN: PERCENTAGE BY COLUMN

SES	Not Watching	Watching
5	30	20
4	24	14
3	22	16
2	15	30
1	9	20

How can this inverse relationship be explained? Two answers have been given. First, there is the possibility that the leisure needs of the higher SES parents are not met by watching these vapid programmes, singularly destitute of cultural interest. For example. Comstock et al. report that when U. S. public and commercial television are equally accessible, there is a significant tendency for people in higher SES groups to watch the former. "The relationship would appear to depend largely on the greater appeal of the content of public television to those of higher socioeconomic status" (p. 119). Implicit in this idea is the high probability that such parents will control what their children watch, i.e., they will not allow the television set to become an "electronic babysitter." Evidence for this very important (and researchable) proposition is lacking. Second, high SES parents are likely, as far as the writer has observed, to make available to the child alternative, often expensive, pursuits that reduce the amount of viewing done by their children. Examples include reading, playing a musical instrument, riding ponies, skiing, skating. Sometimes the hobbies, like swimming, are not so expensive, but the parent is keen to see the child engage in them anyway. A third explanation, unusual but not incompatible with the other two, takes the form of using Bernstein's (1960, 1961) demonstration and Hoggart's (1961, chap. 7, 8) documentation of the fact that a preference for the concrete rather than the abstract (attainment and ability variables in this study) has always characterized poor (and poorly-educated) people. It can then be argued that such a preference has now become more salient and widespread because of the impact of television.

Correlational Analysis

The E77 and E78 matrices of correlations are given in Table 6 and 7. With the exclusion of the Total variables, the matrices were factor analyzed by rotating the principal component factors to a varimax criterion. A TV factor, regardless of content, is evident in both samples and this factor is orthogonal to the cognitive one. One puzzle is that the Mature variable never loads on the cognitive factor, and this is the case also in other samples tested by the author in which the two factors appeared (Anderson, 1979). The only support for Hornik's negative "effects" comes from three minor negative loadings on the cognitive factor from the E78 sample.

TABLE 6

CORRELATIONS AMONG ALL VARIABLES (E77, $N=198$)

	SEX	SES	VIQ	NVIQ	Vocab	P.C.	Math	Sitcom	Viol	Mat	Kidvid
Sex	---	.001	-.064	-.075	.129	-.043	-.075	-.069	-.169	.279	.313
SES		---	.163	.119	.131	.161	.098	-.058	-.109	-.019	-.136
VIQ			---	.612	.506	.574	.405	-.011	-.148	.015	-.045
NVIQ				---	.282	.432	.446	.066	-.065	-.013	-.006
Vocab					---	.646	.361	-.066	-.186	.039	-.179
P.C.						---	.491	-.059	-.169	-.021	-.112
Math							---	-.028	-.114	-.111	.029
Sitcom								---	.523	.320	.489
Viol									---	.376	.435
Mat										---	.421
Kidvid											---
Total											

TABLE 7

CORRELATIONS AMONG ALL VARIABLES (E78, $N=275$

	Sex	SES	VIQ	NVIQ	Vocab	P.C.	Math	Sitcom	Viol	Mat	Other	Kidvid
Sex	---	-.066	-.049	-.007	.040	-.068	-.062	-.073	.344	.183	-.066	.159
SES		---	.309	.362	.422	.399	.253	-.277	-.222	-.062	-.196	-.005
VIQ			---	.668	.701	.695	.493	-.112	-.119	.064	-.107	.082
NVIQ				---	.572	.591	.606	-.136	-.112	.050	-.114	.042
Vocab					---	.826	.547	-.070	-.073	.110	-.101	.081
P.C.						---	.625	-.110	-.133	.016	-.078	.031
Math							---	-.144	-.140	-.077	-.026	-.045
Sitcom								---	.588	.466	.652	.311
Viol									---	.455	.544	.257
Mat										---	.455	.233
Other											---	.247
Kidvid												---
Total												

Item Preferences

It was decided to examine by sample the items most preferred (by 80 percent or more of the students) in all of Anderson's (1979) six samples, E78, and five from Vancouver — V1, V2 (three grades, 5, 6 and 7), and V3. The results are given in Table 9. Four shows are commonly preferred by these groups: Love Boat, Charlie's Angels, Happy Days, and Eight is Enough. If the criterion of entry to this group is lowered to include shows preferred in five of the six samples, three more programmes can be included: Laverne and Shirley, Chips, Three's Company. A criterion of four out of six would mean the addition of Fantasy Island. This list of handy perennials would be: Love Boat, Charlie's Angels, Happy Days, Eight is Enough, Laverne and Shirley, Chips, Three's Company, and Fantasy Island. Of these, only Chips is rated as a violent show. These are "prime time" programmes when the parents are probably watching too.

TABLE 8

PRINCIPLE FACTORS ORTHOGONALLY ROTATED TO THE NORMALIZED VARIMAX CRITERION

	Loadings			
	E77		E78	
	Factor 1	Factor 2	Factor 1	Factor 2
Sex	-.025	.033	-.028	.145
SES	.190	-.114	.442	-.210
VIQ	.785	-.017	.801	-.035
NVIQ	.636	.047	.750	-.003
Vocab	.647	-.123	.869	.046
Read	.797	-.098	.885	-.016
Math	.586	-0.035	.669	-.070
Sitcom	.016	.698	-.134	.800
Viol	-.150	.680	-.133	.746
Mat	.012	.531	.061	.620
Other	---	---	-.100	.730
Kidvid	.048	.706	.063	.374
% Total Variance	28.1	20.2	32.8	22.4

TABLE 9

PERCENTAGE PREFERENCE OF ITEMS BY SAMPLES

Item	E78	V1	V27	V26	V25	V3
Love Boat	91	93	98	95	82	87
Charlie's Angels	88	88	80	83	80	82
Hardy Boys/Nancy Drew	88					
Brady Bunch	88	80				
Bewitched	87	81				
Happy Days	86	96	94	94	92	95
Eight is Enough	81	94	87	90	84	82
Kidvid	80	82			80	
Welcome Back Kotter	80	87		80		
Laverne and Shirley		90	89	80	81	80
Chips		89	81	80	81	81
Three's Company		86	94	93	80	80
Fantasy Island		85	80	85	80	
What's Happening		84		82		
Starsky and Hutch			80	83		

The much longer list of items least preferred (less than 20 percent of subjects watching them in each sample) fall into four categories: talk shows (Merv Griffin); programmes with older people as protagonists (Barnaby Jones); serious programmes (Science Magazine; The Fifth Estate); and programmes that are sophisticated in language and humour (Bob Newhart, King of Kensington).

Except for Hockey Night in Canada, Canadian youngsters prefer to watch American rather than Canadian television programmes.

Conclusion

Three findings emerge from these studies. (1) The performance of youngsters in most samples on the tests administered can be reliably assigned to two independent clusters of variables (factors): ability-attainment and TV viewing; the first is an academic factor, the second a TV factor. (2) Steiner's graphic position, only slightly supported by the present work, should be discarded pending further investigations, possibly of the performance of youngsters in later grades. (3) Children in the higher socioeducational categories, defined as occupations characterized largely by the use of symbolic skills, watch markedly less television than their polar counterparts. If there has been a significant decline in youngsters' academic performance during the last thirty years, heavy TV watching is an unlikely source of the problem. Arguments to the contrary by Mankiewcz and Swerdlow (1976, chap. 6) should be viewed with scepticism.

Notes

1. Hunka, S. Personal communication, February 18, 1981.

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PERSPECTIVES

Child Abuse: Exceptionality as a Risk Factor

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Abusive acts cause the death of children each year. According to V. J. Fontana, Chairman of New York's Mayor's Task Force on Child Abuse and Neglect (cited in Martin, 1973), "statistics strongly suggest that child battering is probably the most common cause of death in children today, outnumbering those caused by any of the infectious diseases, leukemia, and auto accidents" (p. 52).

The history of child abuse dates from early times and has been tolerated in varying degrees within diverse cultural settings. Often for economic, political, or religious reasons defective children were destroyed with cultural approval. In biblical times Herod destroyed an entire generation of males, an act considered to be his prerogative. In early industrial society children were exploited, beaten, and forced to work in dangerous situations involving unshielded machinery and exhaustive physical postures. Although the "Are there no workhouses?" attitude has softened and modern western society does not overtly endorse the abuse of the child, the maltreatment continues with society turning a deaf ear.

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Bakan in *Slaughter of the Innocents* (1971) noted that child abuse may not be more common than in yesteryear but that recent publicity has removed the virtual blackout which characterized early history of the topic. According to Bakan, the topic is unsavoury and many pretend that it is limited to a very few persons with mental disturbances. Unfortunately, child abuse is not rare, nor is the mental disturbance hypothesis supported. Kempe and Helfer (1972) stated that fewer than ten percent of abusing parents are seriously mentally ill.

With Caffey's (1946) suggestion that ill-treatment to children might be an intentional act on the part of parents came a wave of concern and throughout the 1950's research increased. The term "battered child", introduced by Kempe (Kempe, Silverman, Steele, Droegmueller & Silver, 1962), brought with it a plethora of articles, books, and research papers reflecting a heightened interest on the part of educators, social workers, welfare agencies and politicians. Protective legislation ensued in many provinces. Kempe proposed the term to describe subdural hematomas and characteristic fractures which appeared in various stages of healing in X-rays of a child's limbs, head or body, a detection technique gleaned from Caffey's radiographic and clinical studies dating from the 1920's. Even with this, as pointed out by Fontana (1971), the doctor must rule out any and all either organic or regular accidental causes of skeletal manifestations attributed to prolonged or difficult labour or disease.

The widely accepted current definition of child abuse and neglect is defined by U. S. Public Law 93-247 (1974) as:

> ...physical or mental injury, sexual abuse, negligent treatment or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare under circumstances which indicate that the child's health or welfare is harmed or threatened. (Cited in Hallahan & Kaufmann, 1978, p. 405.)

It is the usual case that child abuse is carried out without witnesses and the child is too distressed or immature to witness on his own behalf. The young child is in a very vulnerable position in that he cannot defend himself (in a physical sense), he cannot verbally express his position clearly, he does not know who to turn to and usually is inhibited from doing so through fear of further beatings.

Child abuse, much to public disbelief, is not linked with poverty or socioeconomic level. Differing from child neglect, it is an act of commission and it occurs in impoverished, middle-income and upper-income settings, among all ethnic and religious groups (Young, 1964).

That mental retardation and other handicaps can result from physical abuse is certain. Two decades ago Kempe and his fellow researchers (1962) centered upon the magnitude of the problem and its dire effects noting that of 302 cases of physical abuse identified in the United States, 11 percent of the children had died and 28 percent had received permanent injury. Terr (1970) reporting on ten battered children and their families, evaluated over a six-year period noted "ego defects" such as withdrawal, indifference to the mother and psychomotor retardation in the abused youngsters. Terr hypothesized that such disturbances are related to dependence upon an abusing parent in early infancy and childhood.

In a three-year followup of 42 physically abused children Martin reported that 33 percent of the children were found to be "functioning retarded", described as having a developmental quotient (DQ) below 80, and 43 percent had neurological sequelae. Of the entire group, 31 percent had a history of skull fracture or subdural hematoma. As noted by Brandwein (1973), "child abuse may be seriously and significantly involved in contributing to the incidence of mental retardation" (p. 51).

Similarly, Martin,' Beezley, Conway and Kempe (1974) in an extensive consideration of the development of abused children concluded that "the abused child is at high risk for damage to his nervous system and maldevelopment of ego functioning. Actual loss of central nervous system tissue by physical trauma accounts for the mortality and morbidity in these children" (p. 43).

A related area of research concerns the significance of mental and neurological handicaps as causal factors rather than as resultant manifestations of abuse. In essence, the question might be posed, "Is the handicapped child predisposed to abuse?".

The role of handicapping conditions in prompting abuse is difficult to assess in a succinct and definitive manner. The relationship between handicap and abuse is embedded in a matrix of variables all of which maybe considered in a given instance — economic factors, various aspects of marital and family stability, psychological and personality considerations, and the degree of social-cultural tolerance for violence. Also, it is commonly the case with research concerning child abuse that reported data are incomplete and based upon scant regional or local demography. Probably the most problematic aspect of child abuse study is its retrospective nature which makes it difficult, and in many instances impossible, to determine whether handicap antedates abuse or results from it. To unravel the matrix and assign a weighting to a specific handicap as a causal factor presents extreme difficulties.

A causal link was hypothesized as early as the sixties when Johnson and Morse (1968) described the findings of the Division of Services for Children and Youth of the Denver (Colorado) Department of Welfare in a study of 101 children identified as having been injured by parents or caretakers. One very significant finding was that 70 percent of the children had shown physical or developmental deviation *prior* to abuse. Unfortunately, the study did not describe the criteria for pre-abuse evaluation of deviancy reporting only that these children had failed to respond to care, to thrive or to show normal growth or development. Child welfare workers considered 20 of the children to have been "uncontrollable" and disposed to severe temper tantrums. Nineteen of the children were assessed as below normal in speech development; 17 as mentally retarded; 16 as having had toilet training problems; 14 as having a history of feeding problems; 8 with physical handicaps or deformities; and 2 with brain damage.

In the report, child welfare workers described the 52 children who were under five years of age as "whiny, fussy, listless, stubborn, resistive, negativistic, unresponsive, pallid, sickly, emaciated, fearful, panicky, unsmiling" (p. 149). Obviously, a number of these characteristics might qualify either as causes or results of battering. Sensing the tentative danger associated with exceptionality, Johnson and Morse recommended that child welfare workers reach out to parents and effectively relieve the major stress created by a child's "provoking" behavior attributable to chronic or acute physical or mental illness.

During the 1970's a number of studies indicated an overrepresentation of exceptional children in populations of abused children. Interpretation of such findings generated numerous hypotheses and the beginnings of a theoretical framework linking handicap and abuse. Morse, Sahler and Friedman (1970) reported that in 15 of 25 cases of child abuse which they studied, the child was considered to be "different" by his parents, noting that 43 percent of the sample had an IQ of less than 80. Again, the information concerning "difference" was

gathered retrospectively wth parents describing the abused child as "sickly," "bad," "selfish," "defiant," and "spoiled rotten" as compared to his siblings. Morse et al. posited that their follow-up data based upon direct observation of the child, the child-mother relationship, sibling and peer interaction and results of the Denver Developmental Screening Test supported the parental impressions. In all but one of the nine cases classified as mental retardation, the children were thought to have been retarded before the physical abuse.

However, with reference to individuals defined as mentally retarded with IQ's close to 80, it might be reasoned that a lowered intelligence quotient is primarily the result of environmental influence. This would prompt a questioning of succinct retardation-as-causative theses, particularly in instances where abuse is coupled with neglect. Friedman (1972) hypothesized that some abused children are hyperactive or intellectually precocious, suggesting that inquisitive behavior by a child who is more intellectually capable than his parents makes him more vulnerable to abuse.

According to Sandgrund, Gaines and Green (1974) studying 60 abused, 30 neglected and 30 non-abused control subjects the etiology of child abuse appears to involve the interaction of three factors: personality traits of the parents termed "abuse proneness," immediate environmental stress, and actual characteristics of the child which make him a vulnerable "scapegoat." It is the third prerequisite factor which is focal to this paper.

The disproportionate frequency of full-scale IQ's below 70 among the sample of abused and neglected children (25 percent of abused sample, 20 percent of neglected sample, 3 percent non-abused control subjects) caused Sandgrund et al. to conclude that a pre-existing cognitive or neurological deficit on the part of a child may cause him to be provocative and unmanageable and that these characteristics greatly increase the probability of abuse when a stress situation presents itself with an "abuse prone" parent. In terms of their definition "the 'abuse prone' parent is one whose negative self-image frequently forces him or her into unrealistically lofty expectations of the child which would be virtually impossible for even an intellectually normal youngster to fulfill" (p. 329). It was posited that the neurologically handicapped or mentally retarded child reinforces the negative self-image of such a parent.

Abused children with major skull trauma involving cerebral hemorrhage, laceration or contusion were eliminated from the study in an attempt to exclude cases of cognitive impairment which resulted from rather than antedated the incidence of abuse. Even with the stated criterion for sample inclusion, Sandgrund et al. cautiously stated that "it remains to be shown conclusively whether cognitive impairment antedates abuse or is one of its effects" (p. 329). Although the problem of cause and effect was not resolved definitively, their findings prompted the modest conclusion that retarded children are more likely candidates for abuse in situations where parents have limited child-rearing capacities.

Soeffing (1975) reported that no major comprehensive research up to that time had examined the existence of a handicap or disability as a causative factor in child abuse adding that "several researchers have reported findings which reveal a possible relationship" (p. 127). Earlier research has centered upon and examined parent personality characteristics, family interaction patterns, stress situations, and characteristics of the abused child. According to Soeffing the study of the abused child himself increased interest in the possible causative role of atypicality

in instances of abuse. Since that time numerous research studies, albeit diverse and independent, have amassed strong support for a theoretical link between exceptionality and child abuse.

Similar to Sandgrund et al. (1974), the psychodynamic model of child abuse presented by Helfer (1975) assumes that in some instances child abuse has its genesis with the child himself or is a function of child-produced stress. According to Helfer's model three conditions are required for abuse to occur: (1) a very special kind of child, (2) a crisis or series of crises, and (3) the potential in the parent for abuse. Helfer clearly points out that in cases of child abuse the child must be perceived by the parent to be special, or actually be special or different from other children.

Nichamin (1973), based upon his own medical practice, noted that neurologically dysfunctioning babies appear to be in an unhappy state throughout infancy and are not easily mollified. According to Nichamin even their crying is somewhat atypical consisting to a great extent of "high pitched, disagreeable screaming" (p. 1390). Protracted crying coupled with feeding difficulties, unresponsiveness to socialization, sleeping difficulties, and elimination problems could prompt severe physical battering in an emotionally unstable or psychoneurotic parent. It is Nichamin's view that with time inappropriate infantile behavior becomes transformed to aggressive, hyperactive motor behavior marked by faulty neurologic inhibitory control and this leads to further uncontrolled violence on the part of parents.

Along the same line, Parke and Collmer (1975) and Sameroff and Chandler (1975) have indicated that the child's appearance, responsiveness to adults, irritability and response to discipline determines to a large degree his treatment by adults.

Friedrich and Boriskin (1976a) presented an analysis of 357 causes of physical child abuse reported during a seventeen-week period in Houston, Texas. The researchers divided the sample into three groups (young, "different," and normal) and classified the injuries as soft tissue wounds (bruises), fractures and cuts or burns. The "different" children comprising 12 percent of the sample were defined as those with Down Syndrome, the blind or deaf, and those in a grade below their age level or a class for children with learning problems or emotional disturbance.

The salient finding was that the younger and "different" children received the more severe forms of abuse. Taken together the younger and "different" groups accounted for all the fractures and 75 percent of the cuts or burns. As cautiously noted by Friedrich and Boriskin, some of the abnormalities in the different groups may have been the result of earlier abuse. An alternative reason which was presented related to the increased amount of stress on the parent of a "different" child, particularly in a situation marked by marital difficulties.

Focusing upon prematurity as it relates to child abuse, Frederich and Boriskin (1976b) cited a number of studies (Elmer & Gregg, 1967; Klein & Stern, 1971; Fomufod, Sindford & Louy, 1975) which have indicated the incidence of prematurity to be higher in samples of abused children than in the general population. Bishop (1971) suggested that some premature babies are hypersensitive to all stimuli, objecting to even gentle handling. The general increase in irritability which accompanies prematurity is often cited as a cause of stress indigenous to premature rather than full-term babies.

Pasamanick (1975) in a longitudinal study of premature infants noted a significant linear relationship between maternal stress and signs of brain

dysfunction stating that it was "the neurologically abnormal child, whether full-term or premature, who had a significantly tense mother" (p. 550).

According to Martin and Klaus (1978) the major factors which mitigate against or contribute toward the occurrence of child abuse include: (1) individual capacities; (2) situational factors; (3) attitudes and values; and (4) social institutional factors. Individual capacities related to child abuse include physical capacities such as general health handicaps caused by disease or genetic errors. As succinctly stated by Hallahan and Kaufmann (1978), "an ugly, irritable, hyperactive or defiant child is more likely to be ignored, rejected or abused than is one with the opposite characteristics" (p. 406).

The Canadian Home and School and Parent-Teacher Association (1978) cite numerous factors that can contribute to a situation of abuse. One factor which is of particular interest is the stress situation in which "children whose special needs and difficulties create extreme tension to those providing care" (p. 2).

Can one generalize concerning the existence of a link between handicap and child abuse amid the web of factors which become entwined in each instance? Problematic issues notwithstanding, it appears warranted to state with some degree of certitude that the "special" child is predisposed to a family situation in which his limited capabilities will create stress and may become a focal point for family crisis. Classroom teachers, and most particularly those with a defined responsibility for exceptional children, should be aware of the increased vulnerability associated with exceptional children.

The inevitable question is: How can the community, the school and the teacher help prevent child abuse associated with exceptionality? Soeffing (1975) suggested that communities provide more effective counselling and support to abusive parents. Recently the writers conferred with respresentatives of British organizations such as Parents Anonymous and the Organization for Parents Under Stress (OPUS) and were impressed by the support, friendship, and sympathetic help offered in confidence to parents during times of stress. Certainly such bodies present a valuable model.

Preservice teacher education must foster an awareness on the part of prospective teachers concerning both the problem and the teacher's individual responsibility. Schools must develop detailed policies, procedures, and inservice training programs directed toward identifying and reporting child abuse.

Obviously, teachers of exceptional children must be made aware that such children run a higher risk of abuse. Special educators must have a clear understanding of the indicators of abuse and the therapeutic needs of abused children.

Soeffing (1975) noted that "education for parenthood programs at the secondary school level must provide more information about emotional and behavioral requirements of child rearing, reasonable expectations of children, and community services" (p. 132). Certainly part of the answer for the future generation of parents must come through education — education concerning special children and their development.

The Standing Committee of the Canadian Senate on Health, Welfare and Science (1980) has recommended the establishment of an organization to be known as "The Canadian Institute for the Study of Violence in Society." Describing the role of the envisaged organization, the Senate Committee stated that it would be required:

b) to initiate, promote and assist the funding of research into those factors which enable most vulnerable children to reach maturity relatively free from antisocial behavior and crime;

c) to provide opportunities on a regular basis (through workshops, research projects, journals, indices, etc.) for those in different disciplines to cooperate in studying violence in Canadian society; the acquisition of values; rational decision-making; non-violent conflict resolution, etc.; and

d) to recommend practical methods of reducing the incidence of violence in Canada. (*Child at Risk*, 1980, Recommendation 28b, c, d, pp. 72-73).

Given the incidence of child abuse associated with exceptionality, it seems apposite that the special education teacher be instructed so that she might know what to ask and what to look for. With reference to the Canadian Senate Report, the informed teacher might serve as an advocate for exceptional children helping to control the violence which is directed toward young children. As noted by Eisenberg (1981), society must be sensitive to the signs of abuse and neglect and to be skilled in treatment if the victims of abuse are not to be abandoned while awaiting the arrival of utopia.

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Kohlberg's Moral Development Program: Its Limitations and Ethical Exclusiveness

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Over the past decade educators from Canada, Great Britain, and the United States have witnessed a resurgence of interest in values and moral education (Cochrane, Hamm & Kazepides, 1979, p.1). During this period, there has been a widespread proliferation of new and diverse approaches to ethical instruction.

A few examples of the many new approaches to moral and values education which have been designed and implemented in the schools are: Bourne and Eisenberg's (1978) Canadian Public Issues Program; Clive Beck's (1971, 1973-77) Reflective, Ultimate Life Goals' Approach; Lawrence Kohlberg's (1972) Moral Development Program; Raths, Harmin and Simon's (1978) Values Clarification Approach; McPhail, Ungoed-Thomas and Chapman's (1972) Lifeline Project; and the Value Reasoning Series developed by Coombs, Daniels, Douglas, Oliver, Wright et al. (1978). In view of the gradual erosion of traditional values and with the increasingly complex, pluralistic nature of contemporary society, many educators have sought to find in these programs and others like them a panacea, so to speak, for the moral confusion and deep-rooted sense of meaninglessness which seem to plague so many of our young people today. Of course, the problems of morality are not new. They have existed for centuries and will likely continue to pose eternal questions for philosophers and lay people alike. However, it could be argued that the recent development of world-wide telecommunication systems, the effects of global migration, as well as the multicultural, religiously diverse composition of contemporary society have all contributed to making the problems of morality especially acute. Once accepted, traditional values concerning work, marriage, religion, success, or the roles of men and women in society are being

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questioned seriously today. Formerly accepted moral guideposts no longer provide direction. For many, the old standards oftentimes no longer apply in today's complex, evolving society. In some instances, previously accepted norms are thought to be downright objectionable or unjustifiable. Male dominance and the exploitation of women, for example, are social phenomena representing past values which are being increasingly rejected in modern times. The point here, simply, is that the upheaval of personal and social values has cast many people morally adrift. Answers to the questions of what is ultimately right, wrong, or good, although never simple, are perhaps more obscure now than ever before. Traditional sources which once provided answers to what is worthwhile and meaningful in life no longer satisfy many individuals. Faced, then, with a plurality of conflicting values and no longer satisfied with previously accepted norms, many people today suffer psychologically from a disturbing confusion and sense of meaninglessness. It is in response to such feelings and perceptions that programs of moral and values education have been developed and promulgated in the schools.

A common assumption made by proponents of all the various programs is that it is possible, at least in principle, to educate people morally without indoctrination. Advocates of ethical instruction feel that moral issues can be addressed in the classroom without involving any kind of personal manipulation and without imposing any particular values upon students. It is believed that individual liberties can be safeguarded and that no specific moral viewpoint need be indoctrinated. In a society characterized by ethnic, religious, and moral plurality, it is deemed necessary that a public system of education hold up no one set of values or beliefs as absolutely true, right, or good. To present students in our publicly supported schools with Christian morality, for example, as if it were superior to the system of ethics embodied by the Islamic faith or as if it were the only true moral belief system would be considered by people who respect the rights and beliefs of others as indoctrinatory, chauvinistic, and/or an infringement on civil rights.

In their efforts to avoid offensive, indoctrinatory practices, most moral and value educators have argued that students should not be taught what to think, but rather how to think (DeFaveri, 1979). By stimulating better forms of moral reasoning instead of transmitting actual content, i.e., particular moral codes, virtues, beliefs, or ideals, it is maintained by many educators that value-neutral programs of ethical instruction can be offered (Kohlberg & Turiel, 1971; Coombs, Daniels & Wright, 1978). The notion is entertained that it is possible to facilitate a working understanding of those skills (Bourne & Eisenberg, 1978) or procedural principles which are needed to reason about and resolve sociomoral conflicts. It is felt that a methodology can be taught which is appropriate to making moral judgments, but which at the same time allows students to reach their own value conclusions. By instilling in the minds of students a rational decision-making procedure for dealing with ethical matters, it is held that personal moral development can be enhanced thereby in an acceptable, nonoffensive fashion.

Although most people would generally agree that it is a laudable goal to help students reason better or to be rational in matters of morality, it is altogether different to suggest that they should be instructed in a rationalistic morality. A rationalistic morality is one whose basic principles are purely formal in nature. The ultimate basis of such a morality is reason, in contrast to religion or tradition. Rationalistic morality need not necessarily be conceived as inconsistent or

incompatible with religious ethics or types of morality based on traditional, conventional norms. In fact, it may be complementary. However, it should be seen as different in certain fundamental respects. Whereas religious morality, for example, is founded on a belief in God and on sacred scriptures such as the Bible, Talmud or Qur'an, the type of formal or rationalistic morality at issue here is based on such logical principles as universalizability and prescriptivity (Hare, 1952, 1965). Ethical formalists such as John Rawls (1971) would also include considerations of reciprocity, generality, unconditionality, and impersonality as belonging to that essentially formalist conception of morality which can be described as rationalistic in orientation. Thus, while religious moralists may wish to ground or ethically justify their actions on the basis of certain beliefs and convictions, rationalists, or those adhering to a formal, rationalistic notion of morality would appeal to principles of reason in justifying their moral actions and judgments. Of course, religious truths can be apprehended by reason. In this way, religious morality can be just as "reasonable" as ascribing to a rationalistic code of ethics. Basing one's ethical principles on religious beliefs makes good sense for many. However, a sensible or reasonable religious morality is not usually conceived to be rationalistic in the ways I have specified. The distinction here between reasonable and rationalistic in the context of ethics is thus one which needs to be underscored. It is subtle but nonetheless vitally important for a proper understanding of secular ethical instruction. The distinction is one which many moral and values educators have, unfortunately, tended to overlook or one to which they have paid too little attention. The result is that in their deliberate efforts to avoid indoctrination, many well-intentioned educators, who have focused almost entirely on procedural principles and/or on forms of moral reasoning in ethical instruction, have unwittingly presented to students a picture of morality which is incomplete at best, a blatant distortion of moral life at worst. By teaching students only to reason better or to be rational in moral matters, many educators have, in effect, promoted a formal, rationalistic conception of morality, one which is not entirely neutral and one whose validity is the subject of much controversy among moral philosophers.[1] Such a formal conception of ethics actually makes specific substantive claims about the nature of morality and normative assertions about what should be considered morally relevant, i.e., what should be included within the proper boundaries of the moral domain. Rather than being ethically neutral, then, the type of rational or formal morality promulgated by many moral instructors is, in essence, heavily value-laden. Certain logical criteria (e.g., universalizability and consistency) are used to define the correct way of making moral judgments or solving moral problems. These same criteria are also employed to distinguish between that which is moral and/or morally justifiable from that which is nonmoral and/or morally inferior. For instance, imperatives which are not both universalizable and prescriptive are not considered examples of moral imperatives, according to Hare (1965). Universalizability and prescriptivity constitute two purely formal conditions which must obtain in order for a command to be considered a moral one.

To support the thesis that methodologically oriented programs of ethical instruction contain an inherent exclusiveness, i.e., insofar as their treatment and delimitation of the ethical realm presents a partial or distorted view of morality, a critical evaluation of Kohlberg's Moral Development Program will be offered. In ways which will be explained, Lawrence Kohlberg's approach is a prime example of how ethical instruction can be rationalistic and how such instruction can leave

out from its purview certain essential elements of morality. By interpreting morality in basically formal, rationalistic terms, by refusing to inculcate particular ideals, values, beliefs and virtues, and by concentrating his efforts almost entirely on trying to further the development of better forms of moral reasoning, Kohlberg ends up promoting an incomplete conception of morality, one which fails to grasp fully the importance of the private and positive aspects of morality associated with such things as religion and self-realization ethics. Although other rationalistic programs could have been chosen for critical evaluation, Kohlberg's was selected due to its widespread usage throughout North America and because of the fact that the Mackay Report[2] has recommended it strongly for use in Ontario Schools.

Kohlberg's Moral Development Program

Lawrence Kohlberg is a psychologist and educational researcher at Harvard who has worked out a stage theory of moral development. Details of his theory may be obtained by referring to Kohlberg and Turiel (1971) and Kohlberg (1972). For my purposes here, the particulars of Kohlberg's theory are not important. What is important to note is how the ideal end point of moral development is construed and how the boundaries of morality are drawn by means of Kohlberg's data collection strategy.

In constructing his stage theory of moral development, Kohlberg makes certain philosophical presuppositions about the exact parameters of the moral domain. His data collection procedure, for instance, which entails questioning students with prepared dilemmas, limits the treatment of morality to the realm of "interpersonal value conflict." Instead of asking students about their ideas or beliefs concerning morality, Kohlberg presents them with prepared conflict dilemmas which call forth some adjudicatory process of reasoning for their resolution. The research methodology thus defines morality and morally relevant concerns in a particular way. Defining what is entailed by conflict in the moral domain, Kohlberg (1971a)) writes:

> A moral conflict is a conflict between competing claims of men: you versus me, you versus him. The precondition for a moral conflict is man's capacity for role-taking. *Most social situations are not moral because there is no conflict in role-taking between the expectations of one person and another.* Where such conflicts arise, the principles we use to resolve them are principles of justice.

A first point to note, then, is that distinctively moral situations necessarily involve conflict between or among individuals and groups. Secondly, by presenting students with dilemmas of interpersonal conflict and then by asking them for the right or most equitable solution, Kohlberg interprets morality essentially within the framework of social justice. As he himself states, "the problem of morality is justice, the problem of considering and choosing between the claims or rights of other persons" (Kohlberg, 1975, cited in Boyd, 1980, p. 189). According to Kohlberg, the main focus of ethics should be placed on deontological issues of rightness rather than on teleological issues of goodness or evaluative appraisals of praise/blame with which the agent-oriented moralities of Greek, Christian, and Humanistic philosophy are so much concerned. In other words, priority in the sphere of morality is given to social and legalistic notions of rights, right action, duties, and obligations over strictly private, psychological, and religious questions of value, personal aspiration, character development, virtue, self-realization, spiritual salvation, and pursuit of the good life. It appears to be Kohlberg's

contention that in a pluralistic, liberal democracy such as ours which tolerates diversity, respects the intrinsic worth of all human beings, and recognizes the individual rights of all men to self-determination within the limits of the law, the main, if not exclusive, goal of morality is to adjudicate instances of interpersonal conflict that invariably arise from differing conceptions of the good. Conceiving morality essentially in terms of rights and duties, then, Kohlberg identifies his cognitive-developmental stage theory as belonging to the formalist tradition in ethics first enunciated by Immanuel Kant and then given later expression in this century by John Rawls (1971) in *A Theory of Justice* (Boyd, 1980, p.185; Kohlberg, 1971b, 1973).

As the ideal end-point of moral development, Kohlberg has articulated on the basis of his research data a stage six conception of morality (Kohlberg, 1971b, p.169). Essentially, it represents a form or mode of reasoning toward which it is felt that educators should strive in their efforts to promote the moral growth of students. At this stage, moral reasoning is described as principled, general in form, objective, impartial, disinterested, universalizable, and, by implication, necessarily involved with social issues or interpersonal concerns. Although at times Kohlberg does seem to admit that private issues concerning the good life or self-realization ethics do belong to the moral domain, in other places he quite frankly subordinates their importance. Excluding such issues from his research methodology, Kohlberg restricts his focus of attention to purely formal ethical principles of justice as fairness and to the adjudicatory function of social morality. Kohlberg (1971b) writes:

> We make no direct claims about the ultimate aims of men, about the good life or about other problems which a teleological theory must handle. *These are problems beyond the scope of the sphere of morality or moral principles which we define as principles of choice for resolving conflicts of obligation.* (pp. 214-215)

He also states that:

> morality is a unique *sui generis* realm. If it is unique, its uniqueness must be defined by formal criteria, so our metaethical conception is formalistic. Like most deontological moral philosophers since Kant, we define morality in terms of the formal character of a moral judgment, method or point of view, rather than in terms of its content. Impersonality, ideality, universalizability, preemptiveness etc., are the formal characteristics of a moral judgment. These are best seen in the reasons given for a moral judgment, a moral reason being one which has these properties. (Kohlberg, 1971b, p. 215).

We see, then, that for Kohlberg, morality is mainly concerned with interpersonal value conflict and its adjudication in terms of justice. We learn from the above quotation that what distinguishes a judgment as moral (vs. non-moral) and morally most adequate (vs. morally inferior) is determined by reference to certain specified formal criteria.[3] Besides those formal criteria listed above, Kohlberg (1973) also includes elsewhere standards of consistency, reversibility, and prescriptiveness as exemplifying the highest form of moral reasoning at stage six. Given, therefore, that stage six thinking about moral dilemmas is seen as the ideal of moral maturity, i.e., the goal for moral educators, it is important to consider it in a bit more detail to understand how and in what ways it promotes ethical exclusiveness and how it is inadequate to account for the full range of moral phenomena in everyday experience.

To begin with, "universalizability" is thought to be the central feature of principled moral judgments. To say that stage six moral judgments are universal in form implies that they are general in application. When testing for the

universalizability of moral judgments, one asks: What if everyone did it or what if everyone used this principle of choice?" (Kohlberg, 1973, p. 642). If a particular action, principle, or maxim cannot be applied to everyone without inconsistency or logical contradiction, then that maxim or principle of action cannot meet the universalizability criterion and hence, would not be considered moral and/or morally justifiable. If, for example, one made it a principle of personal conduct never to keep promises, such a principle could not be generally accepted by all in a consistent fashion without seriously undermining the entire social institution of promise-keeping. If no one ever intended to keep promises or felt obligated to tell the truth, then for obvious reasons, promise-keeping would become a meaningless concept. Simple communication would become a difficult, if not impossible, affair. All bonds of social trust necessary for the successful functioning of society would be destroyed.

Besides their universalistic component, stage six judgments are also characterized by the fact that they are impersonal or disinterested. This feature of moral judgments is felt to be important, especially when dealing with situations of interpersonal conflict which require adjudication. If fair or just solutions to dilemma situations are to be reached, they must be sought from an impartial standpoint wherefrom no one person gains undue advantage. The right solution to moral conflicts cannot be obtained by appeals to self-interest. It must take into account the interests of all and consider them to be of equal worth.

To ensure absolute impartiality in stage six morality, principled reasoning is also characterized by "reciprocity," i.e., by the fact that it is reversible. To say that a moral judgment is reversible is to suggest that any claims to rights and duties must be correlative. If one person has a right with regard to another, then the latter person has a duty or moral obligation to respect that right. Furthermore, reversibility for Kohlberg implies that only those judgments which all parties in a conflictual situation would be willing to accept under a veil of ignorance are valid. To quote Kohlberg (1973) on this issue: "If we have a reversible solution, we have one that could be reached as right starting from anyone's perspective in the situation, given each person's intent to put himself in the shoes of the other" (p. 641). Assuming that, from an objective and impartial standpoint, each disputant was unaware of his or her own position in the conflict, the solution upon which all parties could agree in ignorance of their own vested interests would be considered the morally right one.

Critique of Kohlberg's Formalist Conception of Ethics

In beginning my critique of the formalist conception of ethics which underlies Kohlberg's stage theory of moral development, but more specifically, stage six principled reasoning, the first point which needs to be made is that it is not so much wrong as it is limited in its ability to deal with all important aspects of moral experience. The proposed ideal of stage six morality, although representing a mode of moral reasoning which is adequate perhaps to deal with that area of moral experience which addresses interpersonal value conflict, is inadequate to account for much of what is taken by ordinary people to be morally important in daily living. Although few people would disagree that, as a general rule of thumb, we all have a moral obligation to tell the truth, for example, and that this obligation and others like it may be universalizable and prescriptive in the formalist's sense, it does not necessarily follow that only those rights, duties, and

obligations which meet these specifications are most adequate or distinctively moral as opposed to less adequate and/or non-moral. To imply that this is so would not accurately reflect what is taken as moral in the phenomenology of everyday experience; it would merely represent an unjustifiable use of philosophical licence to define in an a priori fashion what ought to be considered genuinely moral or what ought to be the proper way of handling all conflicts which pertain to morality. In what follows, arguments and illustrations will be provided which build a case for the notion that Kohlberg's formalist orientation to ethics and moral development is ill-quipped to handle certain types of moral phenomena which are necessary for any fully adequate account of morality.

First of all, it should be reiterated that Kohlberg conceptualizes morality primarily in terms of interpersonal value conflict, i.e., "you versus me, you versus him" (1971a). Such conflict no doubt constitutes a large portion of that type of experience we call moral. Kohlberg's preoccupation with such conflict is also what makes his theory of moral development essentially social in orientation. However, it should also be emphasized equally that not all moral conflict is interpersonal in nature. There is a kind of moral conflict which is private, psychological or *intra*personal, as opposed to social or *inter*personal. This type of moral conflict is one in which psychoanalytic theorists have invested much time and effort trying to explain. Psychological moral conflicts arise when inclinations and duties clash with one another. When libidinal impulses direct us toward sexual gratification, for example, and the prohibiting forces of moral conscience cause us to hesitate for fear of guilt or shame, we find a classic confrontation between the "id" and "super-ego" to use the Freudian idiom of expression. Acting upon one's sexual impulses outside of marriage, say, may be regarded as sinful or morally reprehensible given one's personal beliefs and standards about what is right or wrong. Wanting to engage in such pleasurable activity nonetheless, despite one's moral beliefs and values, is what causes one to experience psychological moral conflict. This inclination-versus-duty type of conflict which represents a fundamental part of morality and which is essentially private in nature, is addressed by Christian Ethics and written about in the Bible. St. Paul states in Galatians 5:17,

> For the flesh sets its desires against the Spirit, and the Spirit against the flesh; for these are in opposition to one another, so that you may not do the things that you please .

and in Romans 7:15 and 19, he writes:

> For that which I am doing, I do not understand; for I am not practising what I would like to do, but I am doing the very thing I hate. For the Good that I wish, I do not do; but I practise the very evil that I do not wish,

Insofar as internal moral conflict comprises one dimension of moral experience, then, and to the extent that Kohlberg's system deals almost exclusively with transpersonal , objective, principles of social justice, it appears to be inadequate to account for and deal with the resolution of private moral dilemmas which are concerned with personal and/or religiously oriented moral crises involving only the moral agent or the moral agent and his God.

The claim that Kohlberg's moral theory is inadequate to deal with situations involving private morality can also be substantiated by considering briefly the famous case of "Sartre's pupil" which is discussed by Sartre (1948) in his book *Existentialism and Humanism*. Recall that during World War 2, one of Sartre's pupils was confronted with the two alternatives of either going off to England to

join the French forces or remaining behind in France to take care of his mother. We are informed that the pupil's brother had been killed in the German offensive of 1940 and that his father was a Nazi collaborator. This set of circumstances instilled in the student strong patriotic feelings. He believed that he had certain responsibilities toward his country and that he was obliged to avenge his brother's death by serving in the armed forces. He also perceived an obligation, on the other hand, to look after his mother who was living alone and who was almost entirely dependent upon him. Realizing that his departure would plunge his mother into a state of despair, the pupil was faced with a decision involving a moral conflict, i.e., either to stay with his mother or to go off to England.

The point which Sartre raises by this example is the fact that someone faced with such a moral dilemma has no formal, objective criteria or universal, prescriptive principles to which he can appeal in making his final decision (MacIntyre, 1970, p. 28). One has both an obligation to serve one's country and an obligation to care for one's parents. If one views the two obligations as equally ultimate, incommensurable, and/or in conflict with one another, the individual faced with this existential dilemma has no social, transpersonal, objective, or generalizable principles of justice or morality to which he can appeal. Those ideal public standards of ethics advocated by Kohlberg, involving such things as consistency, generalizability, impersonality, reversibility, prescriptivity, and disinterestedness do not apply, except perhaps in a highly artificial way, to the type of personal moral conflict faced by Sartre's pupil. The pupil here might very well choose either to remain behind or to go away to England without attempting to legislate the right course of action for others who might find themselves in similar circumstances. No attempt would be made to generalize his course of action as the only correct or right one for other people. The conflict would not be either interpersonal or social in the way understood by Kohlberg. What is at issue here is not "him versus her," i.e., the pupil versus the mother or the pupil versus his country, since the interests of his mother and his country are also very much the pupil's interests. The problem surrounding the decision does not deal primarily with social justice either, but with personal considerations of loyalty, compassion, and love of one's parents. Furthermore, the choice which needs to be made here is not done so in a purely objective, impersonal way, but rather in a highly subjective fashion and with a great investment of personal emotion. Of course, it is fair to say that in one sense the dilemma here is social since it involves the interests of more than one person. However, this just highlights the fact that the judgments and actions of private morality can affect others. The basis upon which private and public morality are distinguished is thus not in terms of who is affected (oneself versus others), but in terms of the kinds of principles and standards which apply in each case. Those which can be generalized justifiably and prescribed are social; those moral principles, rules and maxims which are strictly self-referring, subjective, and relativistic are private. The point to be noted, then, is that the public principles of morality constituting Kohlberg's conception of social justice do not apply in the pupil's decision. What is at issue here is a moral problem with no absolutely right or wrong answer. Whatever decision is taken by the pupil cannot be generalized and prescribed for others. As intimated above, the pupil might decide that the overriding moral responsibility, *for him*, is to go off to war, yet not consider it wrong or morally blameworthy if anyone else chose to remain at home. Whether it is right for him to go off to war is a question belonging to a different class of moral considerations as compared

with those relating to murder or robbery. Whereas we may judge murder as objectively wrong, there are no objectively right actions for the pupil to take. The decision that the pupil ought or ought not go to war, although not objective, universalizable, and prescriptive, however, would nonetheless constitute a moral judgment. In other words, not all moral valuations are necessarily universally prescriptive. As the Sartre example illustrates, within the broader boundaries of social ethics there are certain types of private moral judgments which can be made that are essentially subjective and relativistic, but valid nonetheless. To suggest otherwise could only be defended by an overly restrictive definition of the word moral. Distinctively moral judgments which, in principle, do not entail interpersonal conflict, nor necessitate the formulation of generalizable prescriptions are often made in everyday life. Furthermore, just because such judgments and actions based on them are not principled in the formalist's sense, this does not mean that they are morally less adequate or inferior. Although it may be true that there are some moral duties and obligations (e.g., truth-telling) which, prima facie at least, seem to meet the universalizability criteria of principled stage six morality, it does not necessarily follow that only those duties and obligations which are universally binding, generalizable, and consistent, etc. are moral or that non-universalizable prescriptions cannot be considered morally relevant or ethically as valid as universalizable ones. Stated simply, whereas some aspects of social morality may be ideally objective, universal, and disinterested, others belonging to private morality are subjective, relative, personal, and self-referring.

The notion that private morality exists and that Kohlberg's scheme is not suited to handle it properly may be further substantiated by examining the concept in a bit more detail.[4] An essential characteristic of private morality is that it gives priority to considerations of *being* over *doing*. Of course, human existence entails action and to that extent being necessarily implies doing. They are both inextricably linked. However, from the vantage point of private morality, what one ought to do is largely contingent upon what one wishes to be. In other words, some conception of the kind of person one wants to become dictates what that person is obligated to do in particular sets of circumstances. Some ideal conception of person acts as a guide to action. By living up to the standards of some real or imaginary figure, our moral actions are governed. If, for example, an individual has great admiration for extraordinary people like Terry Fox, Martin Luther King, Norman Bethune, or Cardinal Leger, that individual may try to emulate such people and govern his or her behaviour accordingly. The person may choose to lobby for equal rights or sacrifice material possessions and comfort in service of the poor and suffering. Such actions would result in this instance from feelings of obligation which arise when the person tries to imitate those which are held in highest esteem. The important role of imitation in private morality seems to be virtually ignored in Kohlberg's theory, but well understood by Christian ethics, for example. Matthew writes in Chapter 5, verse 48: "You, therefore, must be perfect, as your heavenly Father is perfect." Paul writes in the first epistle to the Corinthians 11:1, "Be imitators of me, as I am of Christ" and finally, as the Christian theologian Thomas à Kempis (1955) states in his inimitable style:

> He who follows me, says Christ our Saviour, walks not in darkness for he will have the light of life. These are the words of our Lord Jesus Christ, and by them, *we are admonished to follow his teaching and His manner of living*, if we would truly be enlightened and delivered from all blindness of heart. (p. 31)

Conceived as an ethics of being, private morality is primarily concerned with considerations surrounding the good life. Aspiring to be a good person and striving in the process to achieve personal happiness are central aims of private morality. Although by force of circumstance, people must take into account the rights and interests of others as well as their social obligations in living out their private moralities, within the realm of private ethics, people are more preoccupied with the development of character and self-realization. It is largely through cultivating one's character and realizing one's potentialities as a human being that happiness is attained and the good life is lived. Private morality's emphasis on character and self-realization can be contrasted to Kohlbergian formalist ethics. As Kohlberg himself states and as I have already quoted, advocates of his moral development program "make no direct claims about the ultimate aims of men, about the good life or about other problems which a teleological theory must handle. These are problems beyond the scope of the sphere of morality" (p. 11). Kohlberg stresses such things as social justice and correlative rights and duties instead. Such things place broad constraints upon what can be included justifiably within one's private morality, but they are nonetheless peripheral to it.

Although they are not identical, the notions of character development and self-realization which constitute private morality are intimately related, each having implications for the other. There is a great deal of overlap between them. The traits, attitudes, dispositions, motives, intentions and virtues which constitute character play an important role in personal self-realization. Likewise, the values, goals, ideals, beliefs and aspirations which direct the focus of our self-realization have important influences upon how we choose to cultivate our character and moral lives more generally. To some extent, it is true to say that one cannot cultivate one's character without realizing oneself in the process. Character is something which is included under the concept of self as it is customarily understood. Thus, it is difficult, if not impossible, to imagine a person with a fully developed character who has not at least to some degree realized himself or herself as a person or actualized their potentialities. It is also difficult to picture an individual we would describe as self-realized having a completely undeveloped character. The two notions seem to be complementary to each other.

It has been suggested above that in trying to cultivate character and actualize one's potentialities, private morality is primarily concerned with the good life. Elaborating further upon this idea, it could be said that private morality deals with trying to establish what is of fundamental importance in people's lives. Through private morality, people strive to live consistently with some valued notion of goodness, excellence, or moral perfection. In broad terms, it could be stated that private morality is preoccupied with the pursuit of that which is deemed by the individual as ultimately good, worthwhile, and meaningful in living. It is a basic function of private morality to lend significance and direction to the moral lives of individuals. By pursuing specific moral ends, human existence is given meaning, something without which true happiness seems impossible to achieve. A meaningless life is an unhappy life. It is by developing one's potentialities, actualizing one's talents and trying to live in accordance with one's personally chosen ideals, values, beliefs, and aspirations that the good life is lived and happiness attained.

The role which meaning plays in personal moral life has been discussed in depth by Viktor E. Frankl (1967, 1973). According to this psychologist, empirical findings suggest that there is something which he terms a "will-to-meaning" and

that it can be regarded as a primary motivating force in moral life (Frankl, 1973). For Frankl, this will-to-meaning has an independent function in human nature that is not in any way derived from other biological instincts; nor is it derivative of other principles. In other words, the will-to-meaning is an irreducible functional invariant of man's psychobiological structure. It is what separates man from the rest of the animal kingdom. Humans not only have cognitive abilities and a physical structure as do all beasts, they have a unique moral/spiritual capacity whose main function it is to provide a meaningful existence by lending direction and guidance in living. It is this moral/spiritual dimension of man which, in the past, has led him to seek meaning sometimes even at the expense of sacrificing his own life. For the sake of actualizing strongly held ideals, values and beliefs, millions of people throughout recorded history have died trying to preserve a way of life or world-view (e.g., democracy) based on ideas of freedom, liberty, justice, and equality. Such sacrifice for the sake of ideas can leave little doubt that a will-to-meaning does in fact exist in human nature and that it is a strong operative factor in man's moral consciousness.

Even though the will-to-meaning is universal, how it is realized in private morality depends very much upon particular individuals. Each is master of his own fate. No two people express the will-to-meaning in exactly the same way. Some people may quite self-consciously and deliberately set out a definite path which they follow throughout life. They may present to themselves a personal "mission" or goal which, for them, makes life worthwhile. Other individuals, conversely, may appear aimless, having no clearly defined sense of where they are going or what lies ahead in the future. This is not to imply that for them a will-to-meaning is entirely lacking, only that for them it is not articulated as well or perhaps not adequately developed. In any case, insofar as the will-to-meaning gives rise to personal goals and helps to structure our activities in ways which are conducive to their attainment, it helps us to get on, so to speak. Having a moral purpose or mission in life helps private individuals to adapt better to their social environments. Knowing what one's life is for or what its meaning consists of enables one to comfortably situate himself or herself in the world. This knowledge enables one to function in a more healthy fashion psychologically. Thus, to the extent that having a purpose in life lends positive direction and prevents mental or psychological breakdown, symptoms created by the existential vacuum of meaninglessness plaguing so many people today, the will-to-meaning has survival value over and above its moral function in personality (Frankl, 1978).

Having briefly outlined some of what is included under private morality, it is now important to relate the discussion back to Kohlberg's theory and approach to moral development. Taking into account that considerations relating to personal happiness, imitation, character, meaning, moral perfection, and purpose are all found within the parameters of the private moral domain and that Kohlberg barely deals with any of them in deference to social justice, it could be argued that Kohlberg's scheme presents to students a rather sterile or anemic picture of ethics. Kohlberg's account of morality and moral reasoning at stage six depicts a formalist moral system which is primarily social and negative in orientation. Kohlberg's interpretation of morality, which views everything from the perspective of justice as fairness, is virtually blind to the idea that positive moral acts are sometimes performed not for the sake of logical consistency, generality, reciprocity, or fairness, but done out of commitment to certain beliefs, done out of love or sacrifice, or done because one's purpose in life so dictates. People also act

in moral ways, as suggested, to realize themselves as individuals and to actualize their potentialities. Omitting treatment of such things which comprise the essentially positive, teleological (goal-oriented) half of morality's nature, Kohlberg's scheme appears to present us with what Dwight Boyd (1980, p.188) has dubbed a "minimal interpretation of morality," an expression borrowed from Strawson(1970, p. 103). The important, although restricted, purpose of Kohlberg's program is merely to enhance the use of principled moral reasoning in order to adjudicate social conflicts when they arise. Fully cognizant that any acceptable account of ethics must surely do this, one must also realize that it should be able to treat adequately those distinctively private dimensions of moral experience. A fully adequate account of morality must be suited to provide purpose as well as positive direction and meaning in life. Since Kohlberg's theory of moral development offers no initiatives of action, personal directives, or specific values, ideals and beliefs by which to direct our behaviour, it lacks a total approach to moral instruction. It fails to address those private dimensions of morality dealing with subjective, relative matters concerning internal moral conflict and it leaves out of its considerations factors relating to meaning, happiness and the good life which constitute the positive mode of morality. By omitting the private and positive dimensions of morality,then, and by simply focusing on a single dimension of moral experience, i.e., interpersonal value conflict, Kohlberg's theory presents a one-sided or skewed interpretation of ethics, one which in educational practice is likely to produce morally imbalanced students.

Notes

1. Formalistic interpretations of ethics are in direct opposition to Utilitarian and Axiological accounts of morality. Utilitarians and other moral philosophers are often highly critical of those fundamental principles which are advocated by formalist interpretations of ethics. Utilitarians, for example, judge the rightness or wrongness of an action by the consequences it produces, while formalists judge certain acts like truth-telling as right in themselves, irrespective of the results they lead to. Considering, therefore, that formalism is only one account of morality among others, it is suspect that formalist approaches in ethical instruction are absolutely value-neutral as is claimed.
2. What is referred to here as *The Mackay Report* is actually published under the title, *Religious Information and Moral Development* (Toronto: Ontario Department of Education). It was written by J. Keiller MacKay under the auspices of Ontario's Ministry of Education in 1969. Since that time, it has had a profound effect upon the promotion of moral and values education the province.
3. For formalist philosophers such as Kant, someone to whom Kohlberg is greatly indebted, imperatives which are not universalizable or "categorical" are nonmoral, e. g., not relevant to ethics. Non-universalizable imperatives which cannot be generalized are considered "heteronomous" commands belonging to issues of prudence, aesthetics, etc., but not belonging to the domain of morality. Kohlberg would likely allow that some "moral" imperatives and judgments are heteronomous — especially at the conventional level of morality — but he would see the type of reasoning underlying these moral imperatives and judgments as less adequate or inferior when compared to stage six reasoning whose moral imperatives are universally prescriptive.
4. The notion of private morality and its relevance to understanding Kohlberg's theory and moral/values education in general is currently being developed in the writing of my doctoral dissertation tentatively entitled, *Moral and Values Education: A Philosophical Appraisal.* The expected completion date of the dissertation at The Ontario Institute for Studies in Education is 1982.

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BOOK REVIEWS

CHILDREN'S CHARACTERISTICS ON SCHOOL ENTRY: JUNIOR KINDERGARTEN, SENIOR KINDERGARTEN AND GRADE 1. *By Griffith A. V. Morgan, Greta Hofstra, Elizabeth Black and Linda Skinner.* Toronto: Ministry of Education, Ontario, 1979, 409 pp.

The purpose of this study was to obtain and analyze information about young children during their first term in school, in an attempt to establish developmental norms. A random sample of 209 children from a variety of geographic, economic, and cultural areas of Toronto were given tests of physical, intellectual, and social skills. Home and school environments were assessed by the use of questionnaires and interviews with parents and teachers and the resulting scores were statistically analyzed. The result is a vast accumulation of data.

Analysis of these data revealed the usual range of abilities and attitudes among the children and adults. Much of it supported previous findings; for example, that socioeconomic status and parental education are significant contributors to a child's academic success. Test results illustrated the usual difficulties young children have with concepts of seriation and conservation. Not surprisingly they also had certain problems with word recognition, phonics, and spelling. One of the major findings emerging from the data was that parents and teachers tend to overestimate the child's abilities.

The study with its subsequent findings represents the fruits of a mammoth task which undoubtedly took a great deal of time and effort. However, the results are not wholly convincing. The rationale for test selection is not always evident; in fact, some seem inappropriate for use with children in these particular age ranges. One could also question the conditions under which the tests were conducted. Further questions arise. How structured were the questionnaires and interview procedures? How valid are parents' answers to questions about their children or teachers' comments about their teaching behaviours? How much is an observer able to evaluate during only one visit to a classroom? Answers to these questions are not readily available from the text.

It would appear that the major problem lies in the way the findings have been reported. The table of contents is difficult to follow and the abstract tends to deteriorate into a repetitive statement of facts and figures. There are insufficient references cited to support the findings of the study in the light of previous knowledge and research. The presentation of statistical data is confusing and could have been enhanced by a more creative use of tables. Finally, there is no discussion of the implications of the findings, a major deficit since this would necessarily reflect the intent of the study. If the purpose of the study was to

establish developmental norms for children's characteristics on school entry we also need to know the researchers' main reasons for seeking these norms.

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DESIGNING INSTRUCTIONAL TEXT. *By J. Hartley.* London: Kegan Paul, 1979, 125 pp.

READABILITY IN THE CLASSROOM. *By C. Harrison.* Cambridge: Cambridge University Press, 1980, 189 pp.

Between them these two volumes would appear to meet the requirements of two main sectors of the educational establishment: those who write or produce instructional materials and those who use them in the course of their instructional activities. The emphasis by Harrison, who is a reading specialist, is on the needs of the classroom teacher. His stated objectives are to provide educators with (1) a practical guide to assessing the difficulty of schoolbooks, and (2) a means of matching instructional materials to individual children or groups of children. Hartley, who has written and edited several volumes in educational technology, places his emphasis on the writer or producer. A major theme in *Designing Instructional Text* is that *all* aspects of instructional text must be carefully planned. Another theme is that the increasing use of word-processing results in decisions on instructional format being made by those who lack expertness; in Hartley's view these decisions should be made by the originator of the material.

The six chapters of *Readability in the Classroom* address the following topics:

1. What is readability and why is it measured or predicted?
2. The relationship between readability and comprehension;
3. The major readability formulas and how they are used;
4. The Cloze procedure and its place in readability;
5. Guidelines for applying readability measures in the classroom;
6. Using readability data in writing instructional material.

The content of Hartley's book is organized in four main sections: (a) Typographic Planning, including page size and layout, type size and spacing, typefaces; (b) General Issues, such as illustrations, tables, graphs and diagrams, programmed instruction; (c) Specialized Issues: handouts, worksheets and writing books; forms and questionnaires; bibliographies and indices; (d) Evaluating Instructional Text: content analysis; readability analysis; instructional effectiveness.

A major strength of *Readability in the Classroom* is that it really does have the practical approach claimed by its author. There are worked examples of easy and difficult reading materials as analyzed by nine different formulas. The formulas themselves are of varying types: word list; syllable count; sentence length; graphical solution. Harrison's treatment of the relationship between readability and comprehension is well done, as is his series of guidelines as to the grade level and type of material for which the various formulas are most suited.

Like Harrison, Hartley has provided a practical approach. He gives many examples of poorly designed material and indicates how it could be improved. One

advantage of Hartley's encyclopedic coverage is to make the originator of instructional material aware of important factors which are often overlooked, such as the choice of the *size* of the instructional page, to which Hartley gives high priority in planning. He also covers the preparation of lecture handouts and worksheets, topics which are rarely covered in similar works. Both authors support their views and recommendations with recent and extensive research citations from British and North American sources.

On the negative side it must be stated that the coverage of many of the topics in *Designing Instructional Material* is sketchy. It is difficult to criticize Hartley for this as his objective is to review the myriad factors involved in producing effective instructional materials. Those wishing further amplification on matters such as legibility of print may be referred to Tinker, or on readability to Klare (or Harrison!). One area which could perhaps have been profitably expanded is the use of the cloze procedure as a readability measure. Hartley is certainly aware of the cloze, as he discusses it as a measure of comprehension, but omits it from his brief treatment of readability. This is unfortunate, since it is in the preparation and field-testing of instructional materials that the cloze technique is particularly valuable. The cloze can test the difficulty of the material as experienced by the user target population, in contrast to the readability formulas, which predict how difficult the material *should* be for the users.

The nine readability measures covered in *Readability in the Classroom* include all the major formulas and in general are presented concisely and objectively, with one exception. It is difficult to credit Harrison's claim that the Mugford formula is "probably the best." The Mugford does appear in its limited history to have established some validity for certain grade levels, but the supporting research data is minuscule compared to that available on formulas such as the Flesch and the Dale-Chall. The usability of the Mugford formula suffers in comparison with all others except the Dale-Chall, since it requires text samples to be broken down into four different word categories and requires the use of three different charts before readability level is obtained.

Harrison's method of calculating the words per sentence factor by using 100 words seems unnecessarily laborious. This is of course essential when counting syllables or three-syllable words since that is what the formulas call for, but they also call for the mean sentence length, *without* stipulating the sample length. Harrison feels reliability will suffer if the mean sentence length is not calculated from samples all exactly 100 words long, but the chance factors will operate to bring about a mean sample length of probably 105 words or so, which will actually increase the reliability due to the longer mean sample.

In at least two places in the text Harrison refers the reader to a certain figure which will provide a grade reading level according to the Flesch formula. Unfortunately, the figure does nothing of the kind; it is merely the Flesch formula in nomograph format and provides, not the grade level, but the Flesch Reading Ease Score from 0 to 100. There *are* several conversion tables for this purpose available in the literature, to which the reader would have to refer. On a related point Harrison's claim that the Fry Readability Graph is not really a formula is not convincing. Like the Flesch nomograph, which can replace the Flesch formula, Fry's graph is a formula in graphical rather than numerical format.

As noted, each of these volumes covers some of the other's territory. *Readability in the Classroom* will be most valuable for reading and language teachers at public school system levels. *Designing Instructional Text*, although it

contains much of value to classroom teachers, will probably be most useful for trainers and instructors in adult, industrial and technical education.

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PREPARATION OF MANUSCRIPTS

1. All manuscripts must be typewritten, double spaced, and submitted in duplicate. An abstract of approximately 100 words in length, typed on a separate page, should be provided.
2. Tables must be numbered in Arabic numerals with the word 'Table' centered and in capital letters, e.g., TABLE 4. The heading of the table is to be centered below and typed in capitals. The format of tables should conform to the specifications in the APA Publications Manual.
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